CDP-CX220

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model
E Model
Australian Model

Model Name Using Similar Mechanism	CDP-CX250
CD Mechanism Type	CDM-40B
Base Unit Type	KSM-213BKN/M-N
Optical Pick-up Type	KSS-213B/S-N

SPECIFICATIONS

Compact disc player

Laser	Semiconductor laser (λ = 780 nm) Emission duration: continuous
Laser output	Max 44.6 µW* * This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up block with 7 mm aperture.
Frequency response	20 Hz to 20 kHz ± 0.5 dB
Signal-to-noise ratio	More than 105 dB
Dynamic range	More than 98 dB
Harmonic distortion	Less than 0.0045%
Channel separation	More than 97 dB

Outputs

	Jack type	Maximum output level	Load impedance
LINE OUT	Phono Jacks	2V (at 50 kilohms)	Over 10 kilohms
DIGITAL OUT (OPTICAL)	Optical output connector	–18 dBm	Wave length: 660 nm

General

Power requirements

Where purchased	Power requirements
USA/Canada	120 V AC, 60 Hz
Australia	240 V AC, 50/60 Hz
Europe	220 V – 230 V AC, 50/60 Hz
Other countries	110 V – 120 V or 220 V – 240 V AC, adjustable, 50/60 Hz

Power consumption	12 W
Dimensions (approx.) (w/h/d)	When the front cover is closed 430 × 200 × 480 mm (17 × 7 7/8 × 19 in.) incl. projecting parts
Mass (approx.)	9.5 kg (21 lbs)

Supplied accessories

Audio cord (2 phono plugs – 2 phono plugs) (1)
Remote commander (remote) (1)
Sony SUM-3 (NS) batteries (2)
CD booklet holders (2) and label (1)

Design and specifications are subject to change without notice.

COMPACT DISC PLAYER

MICROFILM

SONY®

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MODEL IDENTIFICATION
— BACK PANEL —

PART No.	MODEL
4-998-525-0□	US model
4-998-525-1□	Canadian model
4-998-525-2□	AEP, AED UK model
4-998-525-4□	Singapore model
4-998-525-5□	E model
4-998-525-6□	Australian model

• Abbreviation
AED: North European

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

The laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.

(Except for the customers in the United States and Canada)
The following caution label is located inside the unit.

CAUTION : INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.
ADVARSEL : USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSAETTELSE FOR STRÅLING.
VORSICHT : UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET UND SICHEREITSVERRIEGELUNG ÜBERBRÜCKT. NICHT DEM STRAHL AUSSETZEN.
VARO! : AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
VARNING : OSYNLING LASERSTRÅLING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.
ADVERSEL : USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.
VIGYAZAT! : A BURKOLAT NYITÁSAKOR LÁTHATATLAN LÉZERSUGÁRVESZÉLY! KERÜLJE A BESUGÁRZÁST!

For the customers in Canada

CAUTION
TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS POLARIZED AC PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

SECTION 1
SERVICING NOTES

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:
Check the antenna terminals, metal trim, “metallized” knobs, screws, and all other exposed metal parts for AC leakage.
Check leakage as described below.

LEAKAGE

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers.). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers’ instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The “limit” indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

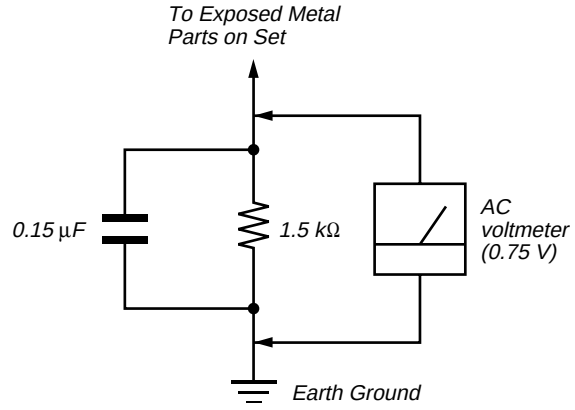


Fig. A. Using an AC voltmeter to check AC leakage.

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

LASER DIODE AND FOCUS SEARCH OPERATION CHECK

Carry out the “S curve check” in ”CD section adjustment” and check that the S curve waveform is output repeatedly.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

CD-TEXT TEST DISC

This unit is able to display the test data (character information) written in the CD on its fluorescent indicator tube.
The CD-TEXT TEST DISC (TGCS-313:4-989-366-01) is used for checking the display.
To check, perform the following procedure.

Checking Method:

1. Turn ON the power, set the disc on the disc table with the side labeled as “test disc” as the right side, close the front cover, and chuck the disc.
2. Press the [▷] button and play back the disc.
3. The following will be displayed on the fluorescent indicator tube.
   Display : 1kHz/0 dB/ L&R
4. Press the [⏮] and [⏭] buttons to switch the track. The text data of each track will be displayed.
   For details of the displayed contents for each track, refer to “Table 1 : CD-TEXT TEST DISC TEXT Data Contents” and “Table 2 : CD-TEXT TEST DISC Recorded Contents and Display”.

Restrictions in CD-TEXT Display

In this unit, some special characters will not be displayed properly. These will be displayed as a space or a character resembling it. For details, refer to “Table 2 : CD-TEXT DISC Recorded Contents and Display”.

Table 1 : CD-TEXT TEST DISC TEXT Data Contents (TRACKS No. 1 to 41:Normal Characters)

TRACK No.	Displayed Contents	TRACK No.	Displayed Contents
1	1kHz/0dB/L&R	22	1kHz/-90dB/L&R
2	20Hz/0dB/L&R	23	Infinity Zero w/o emphasis//L&R
3	40Hz/0dB/L&R	24	Infinity Zero with emphasis//L&R
4	100Hz/0dB/L&R	25	400Hz+7kHz(4:1)/0dB/L&R
5	200Hz/0dB/L&R	26	400Hz+7kHz(4:1)/-10dB/L&R
6	500Hz/0dB/L&R	27	19kHz+20kHz(1:1)/0dB/L&R
7	1kHz/0dB/L&R	28	19kHz+20kHz(1:1)/-10dB/L&R
8	5kHz/0dB/L&R	29	100Hz/0dB/L*
9	7kHz/0dB/L&R	30	1kHz/0dB/L*
10	10kHz/0dB/L&R	31	10kHz/0dB/L*
11	16kHz/0dB/L&R	32	20kHz/0dB/L*
12	18kHz/0dB/L&R	33	100Hz/0dB/R*
13	20kHz/0dB/L&R	34	1kHz/0dB/R*
14	1kHz/0dB/L&R	35	10kHz/0dB/R*
15	1kHz/-1dB/L&R	36	20kHz/0dB/R*
16	1kHz/-3dB/L&R	37	100Hz Squer Wave//L&R
17	1kHz/-6dB/L&R	38	1kHz Squer Wave//L&R
18	1kHz/-10dB/L&R	39	1kHz w/emphasis/-0.37dB/L&R
19	1kHz/-20dB/L&R	40	5kHz w/emphasis/-4.53dB/L&R
20	1kHz/-60dB/L&R	41	16kHz w/emphasis/-9.04dB/L&R
21	1kHz/-80dB/L&R		

NOTE: The contents of Track No. 1 to 41 are the same as those of the current TEST DISC-their titles are displayed.

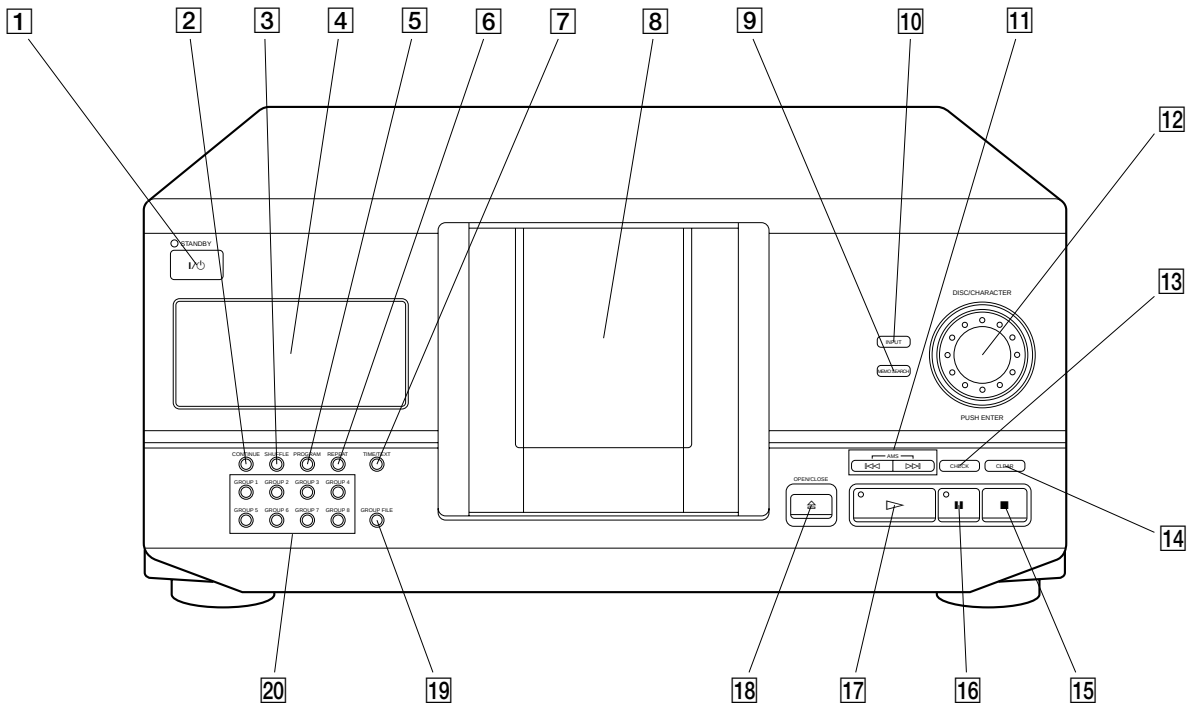
Table 2: CD-TEXT TEST DISC Recorded Contents and Display
(In this unit, some special characters cannot be displayed. This is no a fault.)

TRACK No.	Recorded Contents		Display	
42	! " # $ % & ´	(21h to 27h)1kHz 0dB L&R	← All the same	
43	( ) * + , – . /	(28h to 2Fh)	← All the same	
44	0 1 2 3 4 5 6 7	(30h to 37Fh)	← All the same	
45	8 9 : ; < = > ?	(38h to 3Fh)	← All the same	
46	@ A B C D E F G	(40h to 47Fh)	← All the same	
47	H I J K L M N O	(48h to 4Fh)	← All the same	
48	P Q R S T U V W	(50h to 57Fh)	P Q R S T U V W	(50h to 57h)
49	X Y Z [¥] ^ _	(58h to 5Fh)	X Y Z [\ ] ^ _	(58····
50	` a b c d e f g	(60h to 67Fh)	` a b c d e f g	(60h to 67h)
51	h i j k l m n o	(68h to 6Fh)	← All the same	
52	p q r s t u v w	(70h to 77Fh)	p q r s t u v w	(70h to 77h)
53	x y z { l } ~ ▉	(78h to 7Fh)	x y z { ¦ } ~ ▉	(78····
54	▯ ¡ ¢ £ ¤ ¥ ¦ §	(A0h to A7h) 8859-1	¡ ¢ £ ¤ ¥ ¦ §	(A0····▯ is not displayed
55	♪ © ª « ¬ ® ¯	(A8h to AFh)	♪	(A8····© ª « ¬ ® ¯ are not displayed
56	· ± ² ³ ´ µ ¶ •	(B0h to B7h)	´ µ •	(B0····· ± ² ³ ¶ are not displayed
57	† ¹ º » ¼ ½ ¾ ¿	(B8h to BFh)	† ¿	(B8····¹ º » ¼ ½ ¾ are not displayed
58	À Á Â Ã Ä Å Æ Ç	(C0h to C7Fh)	À Á Â Ã Ä Å Æ Ç	(C0h to C7h)
59	È É Ê Ë Ì Í Î Ï	(C8h to CFh)	← All the same	
60	Ð Ñ Ò Ó Ô Õ Ö ×	(D0h to D7Fh)	D Ñ Ò Ó Ô Õ Ö ×	(D0h to D7h)
61	Ø Ù Ú Û Ü Ý Þ ß	(D8h to DFh)	Ø Ù Ú Û Ü Ý Þ ß	(D8····
62	à á â ã ä å æ ç	(E0h to E7h)	à á â ã ä å æ ç	(E0h to E7h)
63	è é ê ë ì í î ï	(E8h to EFh)	← All the same	
64	ð ñ ò ó ô õ ö ÷	(F0h to F7Fh)	ð ñ ò ó ô õ ö ÷	(F0h to F7h)
65	ø ù ú û ü ý þ ÿ	(F8h to FFFh)	ø ù ú û ü ý þ ÿ	(F8h to FFh)
66	No.66		← All the same	
67	No.67		← All the same	
to	to		to	
99	No.99		← All the same	

SECTION 2
GENERAL

LOCATION OF PARTS AND CONTROLS

Front Panel

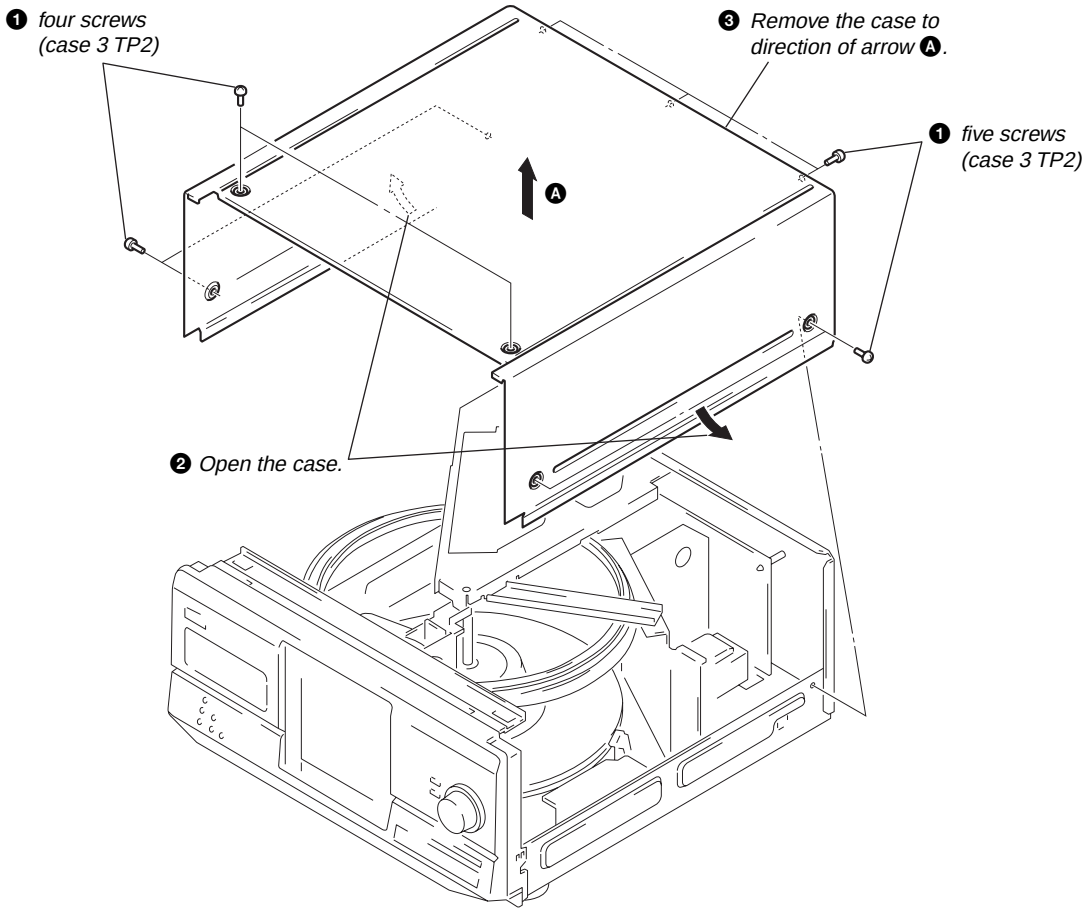


1 I/⏻ (power switch) button
2 CONTINUE button
3 SHUFFLE button
4 Display window
5 PROGRAM button
6 REPEAT button
7 TIME/TEXT button
8 Front cover
9 MEMO SEARCH button
10 INPUT button
11 ⏮/⏭ buttons
12 JOG dial (DISC/CHARACTER/PUSH ENTER knob)
13 CHECK button
14 CLEAR button
15 ■ button
16 ❚❚ button
17 ▷ button
18 ⏏ (OPEN/CLOSE) button
19 GROUP FILE button
20 GROUP 1 – 8 buttons

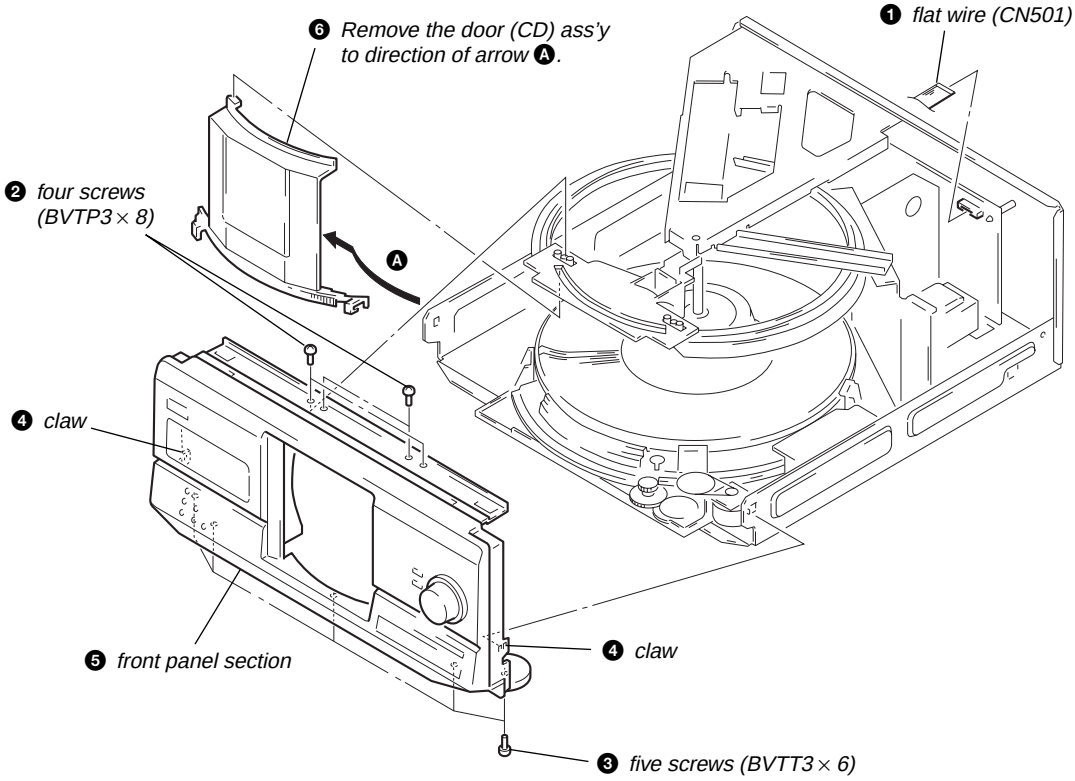
SECTION 3
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

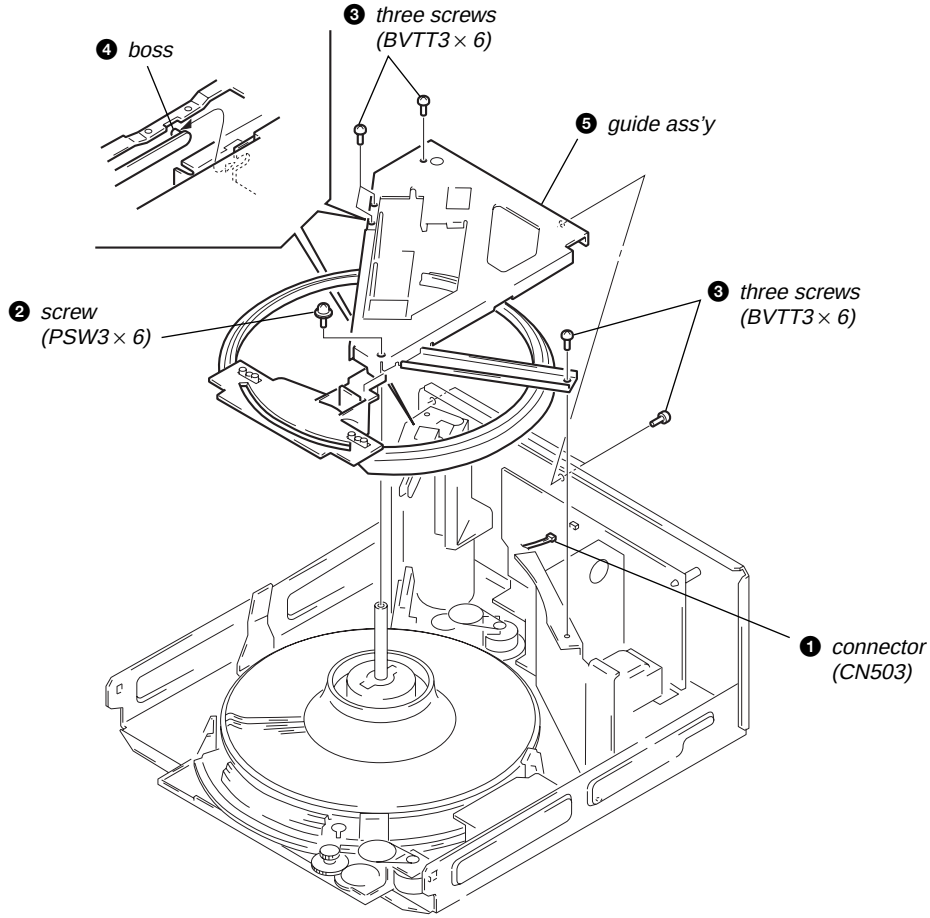
CASE



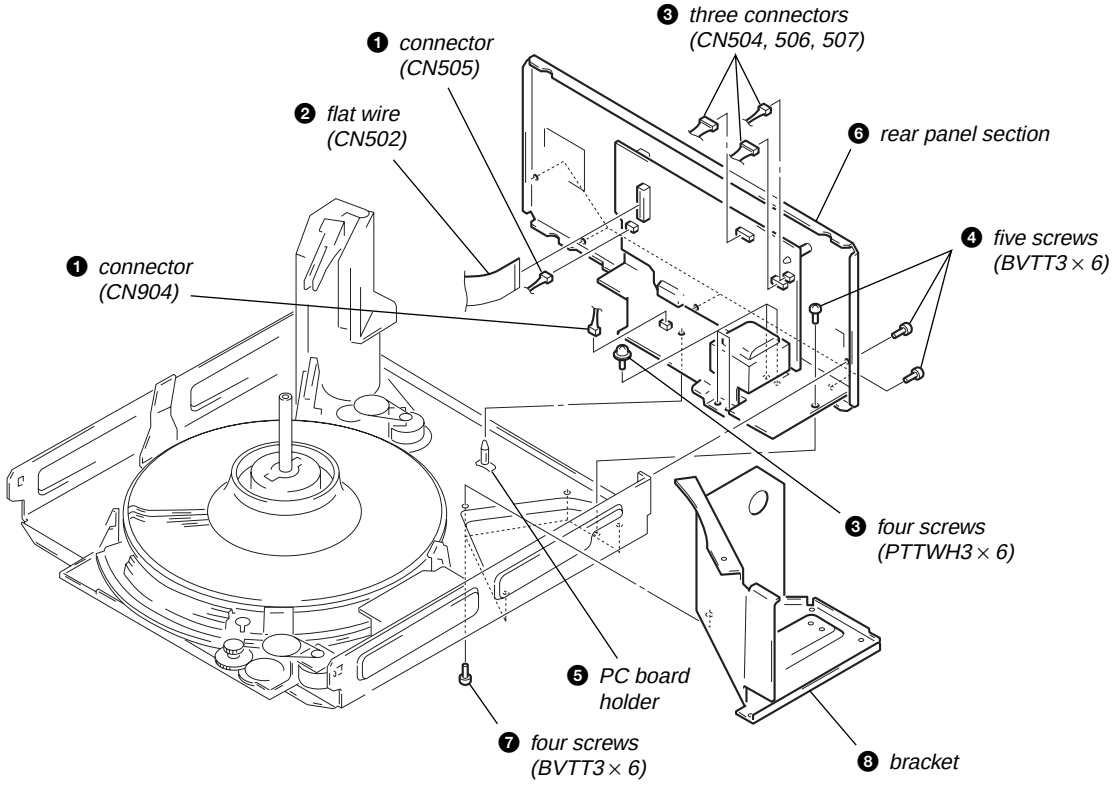
FRONT PANEL SECTION



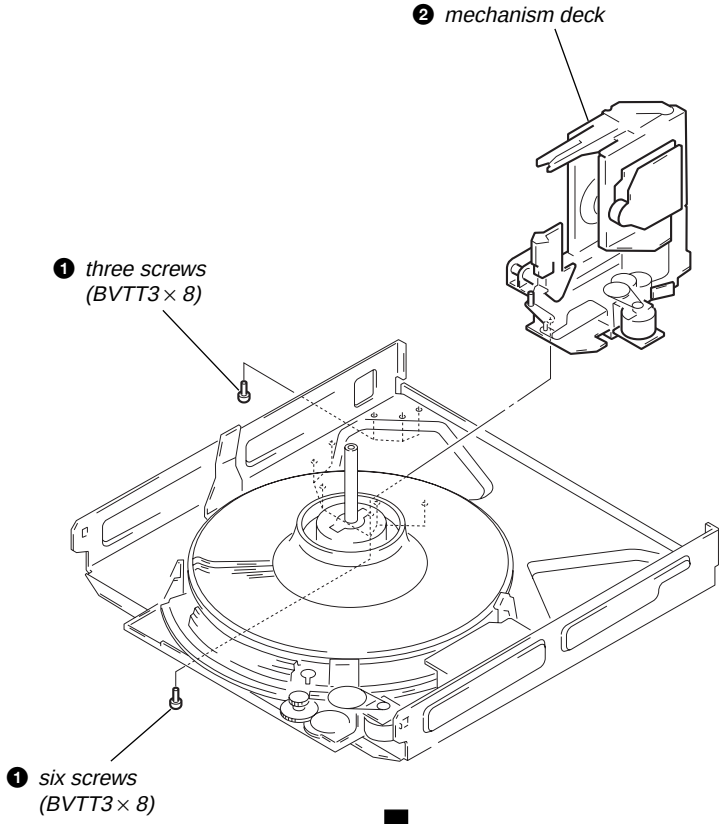
GUIDE ASS'Y



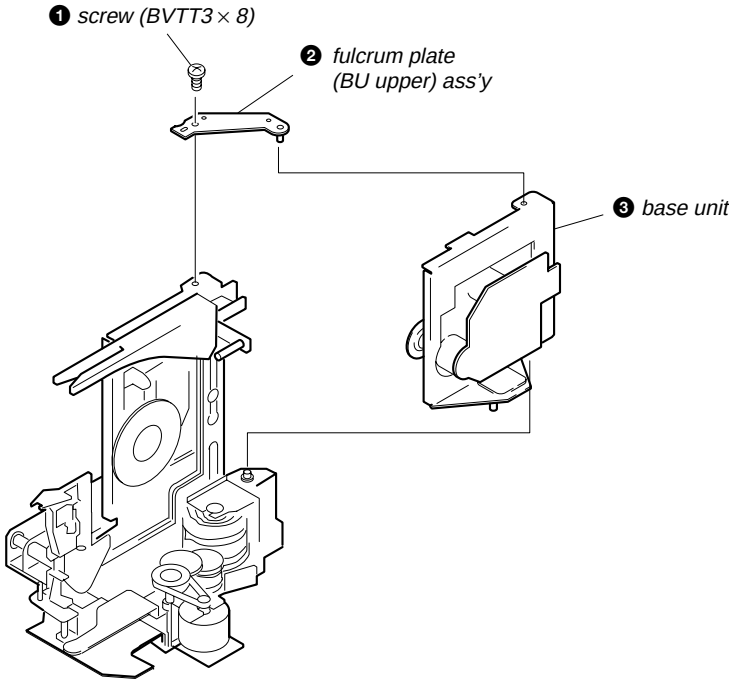
REAR PANEL SECTION


❸ three connectors (CN504, 506, 507)
❶ connector (CN505)
❷ flat wire (CN502)
❻ rear panel section
❹ five screws (BVTT3 × 6)
❶ connector (CN904)
❸ four screws (PTTWH3 × 6)
❺ PC board holder
❼ four screws (BVTT3 × 6)
❽ bracket

MECHANISM DECK



BASE UNIT



SECTION 4
TEST MODE

DISPLAY CHECK MODE

With the power turned off (standby state), press the I/⏻ button while pressing the ❚❚ (pause) button.
All FL segments and grids light up together with the ▷ (play), ❚❚ (pause), and standby LEDs.
At the same time, the GROUP LEDs are scanned one by one.

Note: To exit this mode, press the ■ (stop) button.

ADJ MODE

1. Turn ON the power of the unit, set disc to disc table, and perform chucking.
2. Disconnect the power supply plug from the outlet.
3. To set ADJ mode, connect the test point (TP: ADJ) of the MAIN board to Ground, and connect the power supply plug to the outlet.

The power will turn on automatically, and the first track will be played.
In this mode, table rotation and loading operations are not performed because it is taken that the disc has already been chucked.

Note: The same operations are also performed in the following when the test point (TP: ADJ) is connected to Ground after turning on the power.

- Direct search (movement of sledding motor) is not performed during accessing
- Ignored even when GFS becomes L
- Ignored even when the Q data cannot be read
- Focus gain does not decrease
- Spindle gain does not decrease
- Servo related settings can be set manually and checked (Refer to ADJ Mode Special Functions Table)

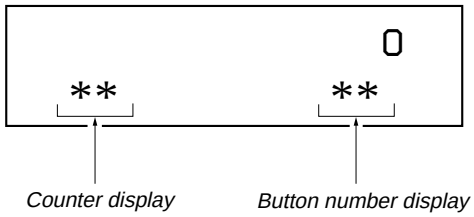
ADJ Mode Special Functions Table
(The buttons shown with ( ) function by using the supplied remote commander only)

Button	Button Number or Display
CONTINUE	Servo average display Displays VC, FE, RF, TE and traverse in hexadecimal numbers
SHUFFLE	Focus bias display Each time this is pressed, the focus bias is switched between 1 and 2 1 Bias actually set Optimum bias Minimum jitter 2 U:Upper aliasing bias L:Lower aliasing bias
PROGRAM	Auto gain display Displays focus, tracking, sledding in hexadecimal numbers
GROUP 1 (1)	Increases the focus bias in 8 steps.
GROUP 2 (2)	Sets the focus bias in the middle of aliasing.
GROUP 3 (3)	Turns off the tracking and sledding servo
GROUP 4 (4)	Returns the auto gain to the initial value (30)
GROUP 5 (5)	Turns off the focus servo
GROUP 6 (6)	Decreases the focus bias in 8 steps.
GROUP 7 (7)	Re-adjusts the focus bias
GROUP 8 (8)	Turns on the tracking and sledding servo
(9)	Switches the focus servo gain between normal and down FG. norm: normal, FG. down: down
(10/0)	Sets the focus bias to 0 (no bias) Next, displays the jitter measured at the focus bias set
CHECK	S-curve observation mode
CLEAR	Automatic eccentric measurement The results of measurement is displayed in mm directly.

KEY AND FLUORESCENT DISPLAY TUBE CHECK MODE

1. Connect the test point (TP:AFADJ) of the MAIN board to the Ground, and insert the power plug to the outlet to set this mode.
   First, the external SRAM is checked, and if abnormal, "SRAM NG" is displayed.
   If OK, the following steps are performed.

   * Fluorescent Display Tube Check Mode
     The whole fluorescent display tube lights up when the connection in step 1 is made.
   * Key Check Mode
     This mode is set when a button is pressed after the whole fluorescent display tube lights.
     All buttons have a button number.
     When a button is pressed, the counter display is counted up, and the number of that button is displayed.
     However, the counter display will only count up to 26, but the number of buttons pressed will always be displayed.

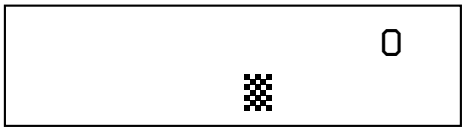


Buttons and Corresponding Button Numbers

Button	Button Number or Display
CLEAR	3
CHECK	4
▷▷Ⅱ (AMS)	5
Ⅱ◁◁ (AMS)	6
PUSH ENTER	7
⏏ (OPEN/CLOSE)	9
INPUT	10
MEMO SEARCH	11
I/⏻	18
TIME/TEXT	19
GROUP FILE	20
GROUP 8	21
GROUP 7	22
GROUP 6	23
GROUP 5	24
REPEAT	27
PROGRAM	28
SHUFFLE	29
CONTINUE	30
GROUP 4	31
GROUP 3	32
GROUP 2	33
GROUP 1	34
▷	All lit (LED lit)
❚❚	Partial lighting 1 (LED lit)
■	Partial lighting 2
DISC/ CHARACTER	Partial lighting 3 • When the jog dial is rotated to the right, the GROUP LEDs light up in the order of 1 → 2..8 → 2nd → 1. • When the jog dial is rotated to the left, the GROUP LEDs light up in the order of 8 → 7..1 → 2nd → 8.

Partial lighting 1

Partial lighting 2

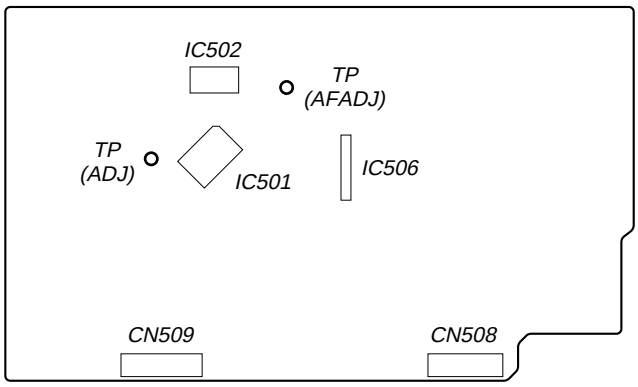


Partial lighting 3

**: Counter displayed*

Test Points Location:

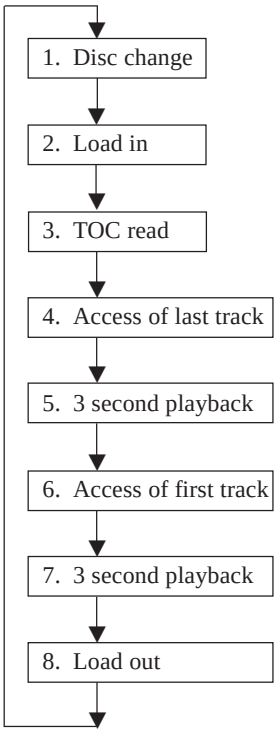
[MAIN BOARD] – Component Side –



AGING MODE

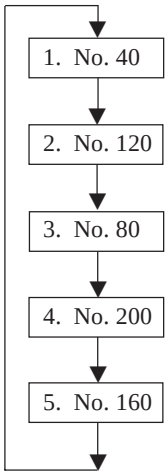
- Mode which repeatedly changes and plays back discs automatically in the unit.
- It will repeat aging as long as no errors occur.
- If an error occurs during aging, it will stop all servos, motors, etc. instantaneously, display the error number, and stop operations. However, the stopping conditions differ according to whether the unit is equipped with the "self-protection function during errors" described later.
  The function serves to maintain the state of the unit when errors occur.

Sequence of Aging Mode



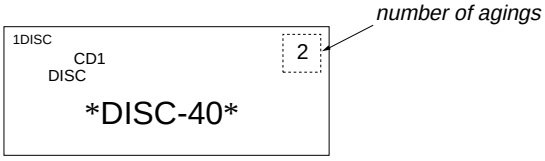
Order of Disc Change

(1 cycle takes 3 minutes)



Special Functions in Aging Mode

1. Disc setting mode:
   5 discs are set before setting the aging mode. This mode makes the setting of these discs more easy.
2. Self protection function during errors:
   Function which voluntarily corrects errors which occur during normal operations by retries.
   If this function is not provided, all operations will be stopped without retiring. It is suitable for checking errors with low reproducibility.
   If this function is provided, and errors can be corrected by retries, aging will be continued without stopping.
3. Aging cycle count function:
   Functions which displays the number of agings carried out on the Fluorescent indicator tube in numbers. One aging cycle consists of five discs.



Aging Method

1. Change the [COMMAND MODE] switch (S901) on set to [CD1].
2. Turn ON the power of the unit. Open the front cover.
3. Press the [AGING START] button of the remote commander for aging mode (J-2501-123-A).
4. When the disc set mode is set, the [▷] and [▮▮] LEDs blink.
5. Rotate the JOG dial. The slits (No. 40, 80, 120, 160, 200) for setting the discs will come forward. Insert the discs into these slits. Do not set the discs in other slits.
6. Set whether the self-protection function during errors is equipped with the unit. Press the [REPEAT] button. If "REPEAT" is displayed on the Fluorescent indicator tube, it means the function is provided. If "REPEAT" is not displayed, it means the function is not provided.
7. Press the [▷] button.
8. The [▷] LED blinks, the aging mode is set, and aging is started.
9. The aging cycle lasts 3 minutes. If errors occur during aging, the error number will be displayed on the Fluorescent indicator tube. (Refer to the following table for the details of the errors.)
10. Aging will be repeated as long as no errors occur.
11. After each aging cycle, the number displayed on the Fluorescent indicator tube will increase.
12. To end aging, press the [I/⏻] button

Error Display

120 Err01

Disc number Error code

Error code

Code number	Name	Contents
Err 01	DISC sensor check 1	No disc in the specified slit
Err 02	DISC sensor check 2	Disc in other slits
Err 03	Table operation check 1	Table motor current over
Err 04	Table operation check 2	No table sensor input
Err 05	Loading operation check 1	Load in timeover
Err 06	Loading operation check 2	Load out timeover
Err *1	BU related check 1	Access timeover
Err *2	BU related check 2	High speed search NG
Err *3	BU related check 3	Q data read error
Err *4	BU related check 4	BU operation (from focus search to until signal can be read) timeover
Err *5	BU related check 5	GFS monitor error
Err *6	BU related check 6	Focus cannot be imposed by focus search
Err *7	BU related check 7	Auto focus bias adjustment cannot be performed

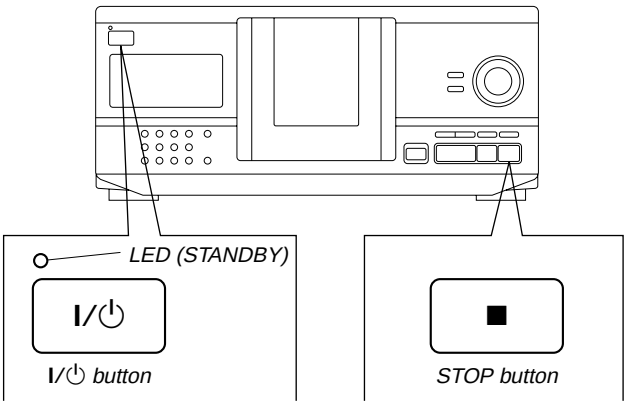
The * numbers mean the following according to the state of the unit during aging

2 : From checking to end of TOC read
3 : From end of TOC read to end of last track playback
4 : From end of last track playback to end of first track playback

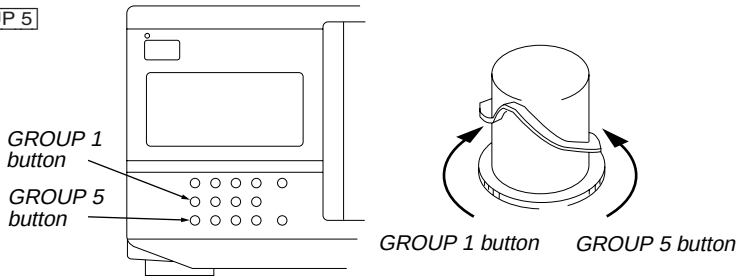
SECTION 5
MECHANICAL ADJUSTMENTS

Perform the following steps before carrying out adjustments.

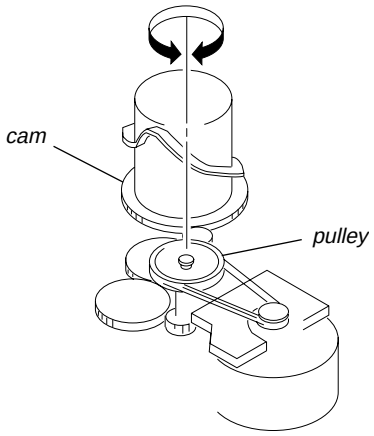
1. Turn ON the power of the unit, set disc to disc table No. 92, and perform chucking.
2. Turn OFF the power.
3. Remove the case.
4. While pressing the [STOP] button, turn ON the [I/⏻] button. The test mode is set.
5. The [I/⏻] button LED (STANDBY) starts blinking. (Test mode)



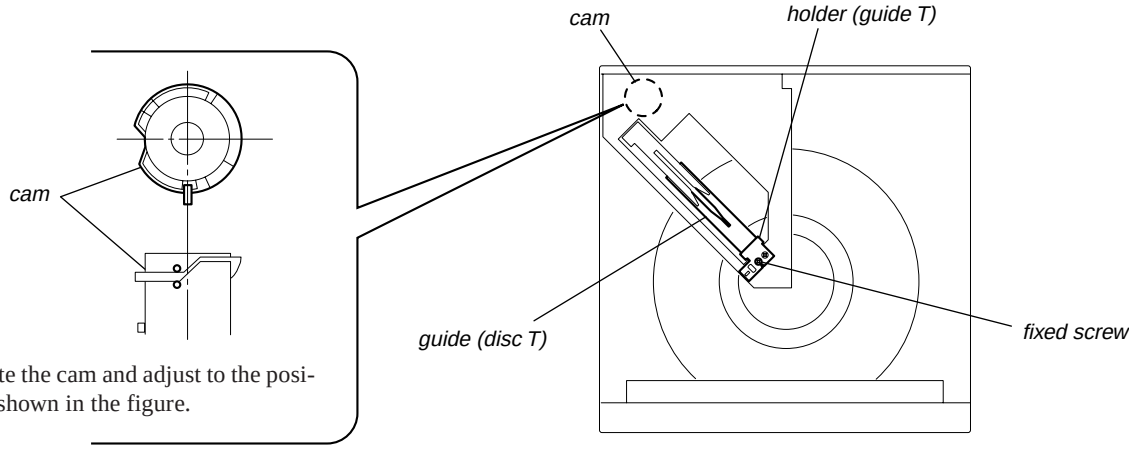
Note 1: The cam will start rotating when the [GROUP 1] or [GROUP 5] button is pressed continuously in the test mode.



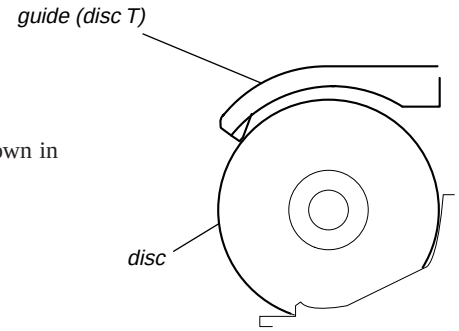
Note 2: If the power cannot be supplied, the cam can be rotated by rotating the pulley with your finger.



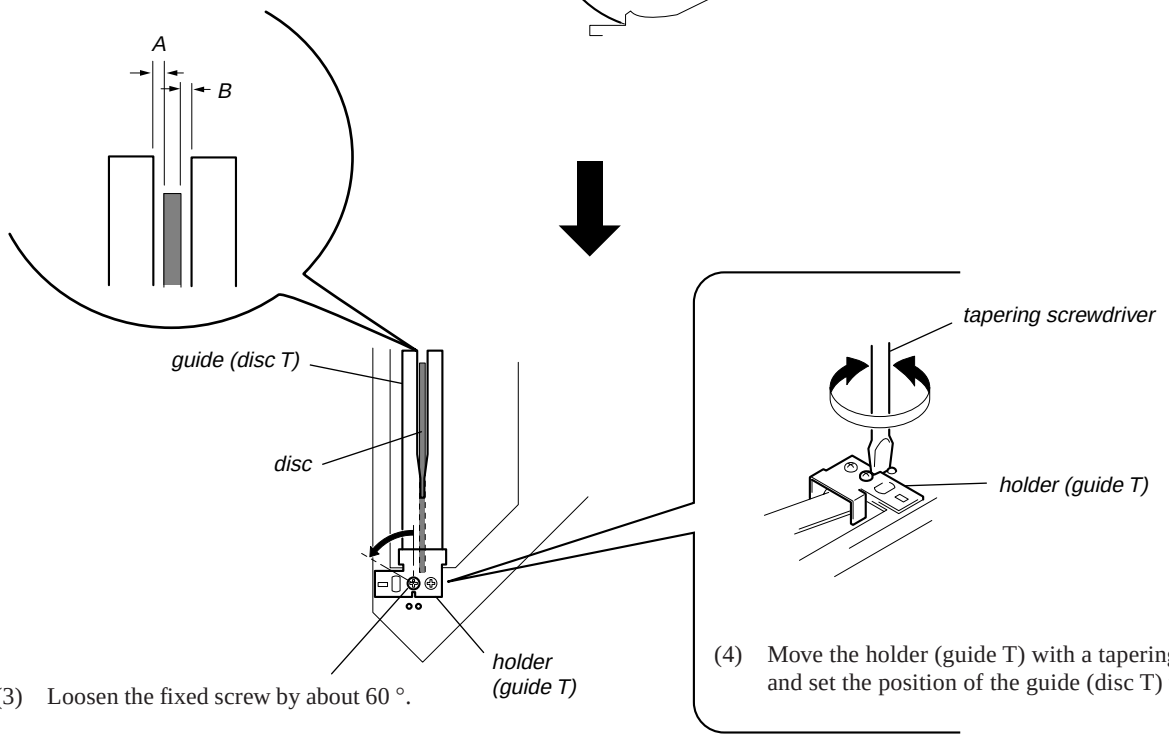
GUIDE (DISC T) ALIGNMENT



(1) Rotate the cam and adjust to the position shown in the figure.



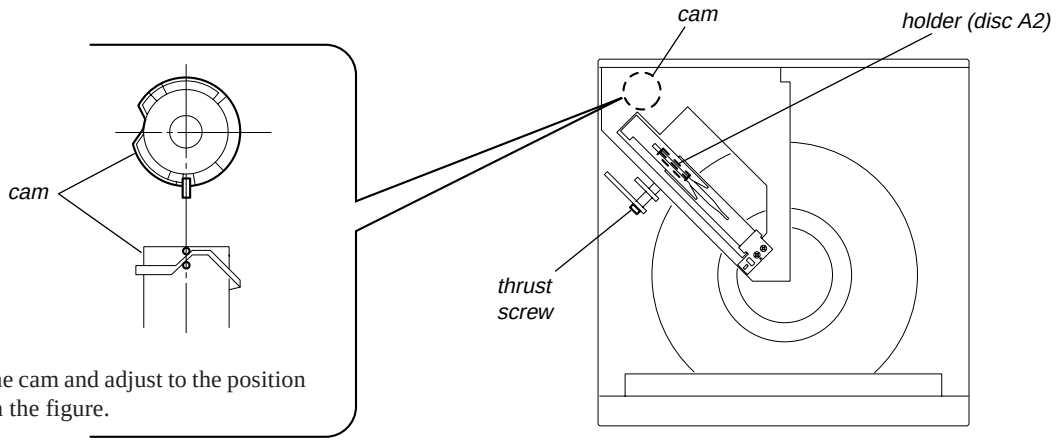
(2) Check that the state is as shown in the figure.



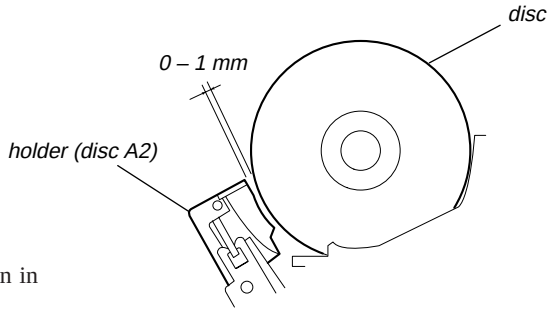
(3) Loosen the fixed screw by about 60 °.

(4) Move the holder (guide T) with a tapering screwdriver, and set the position of the guide (disc T) to A:B=1:1.

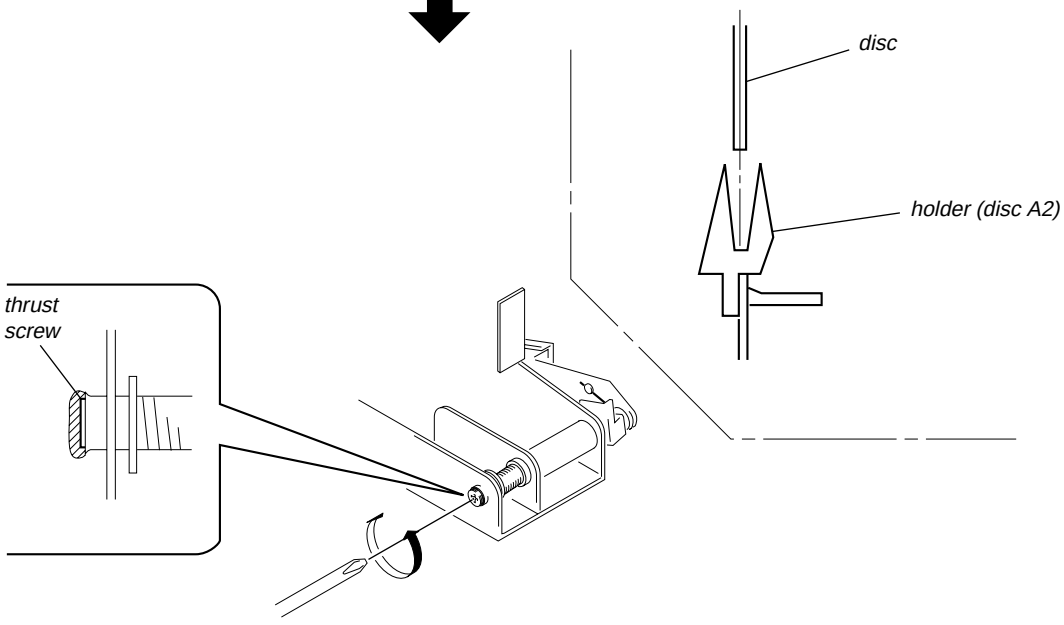
HOLDER (DISC A2) ALIGNMENT



(1) Rotate the cam and adjust to the position shown in the figure.



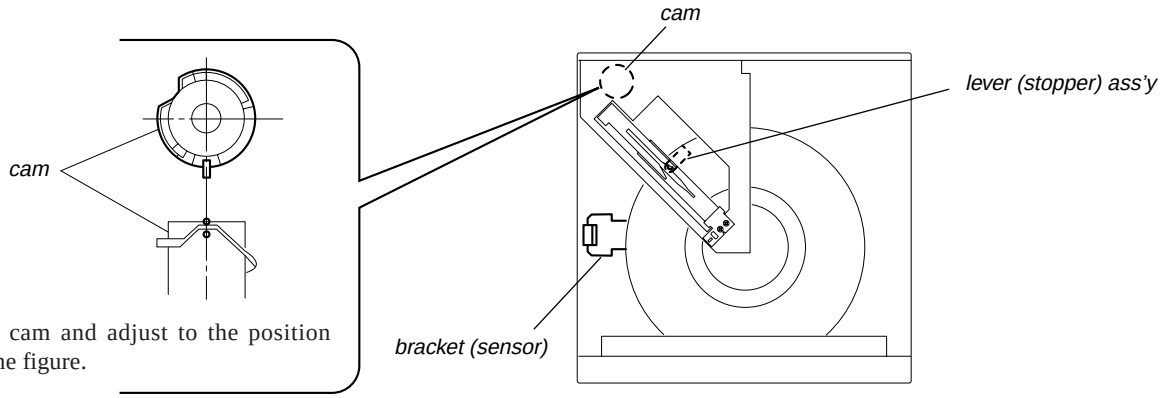
(2) Check that the state is as shown in the figure.



(3) After applying suitable locking compound to the ⊘ part, rotate the thrust screw until the holder (Disc A2) comes to the center of the disc.

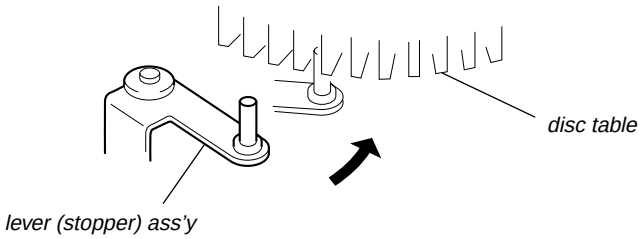
SENSOR ALIGNMENT

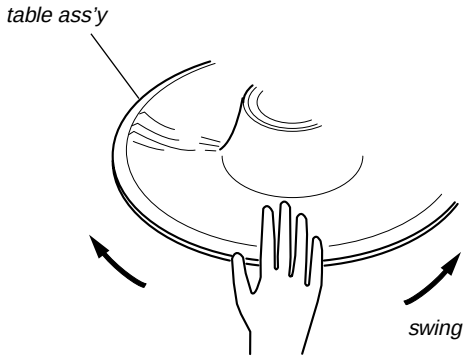
Perform this adjustment after the “holder (disc A2) adjustment”.
If the disc table swings to the left and right just before the disc is chucked, perform the following adjustment.



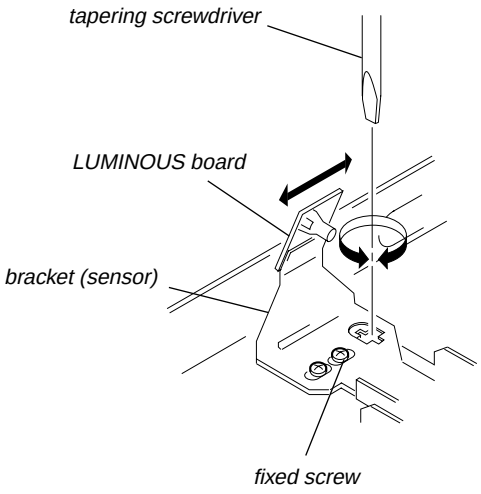
(1) Rotate the cam and adjust to the position shown in the figure.

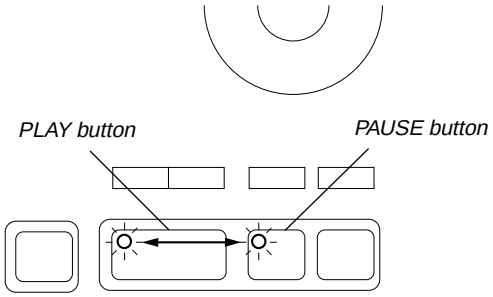
(2) Check that the lever (stopper) ass’y secures the disc table as shown in the figure.





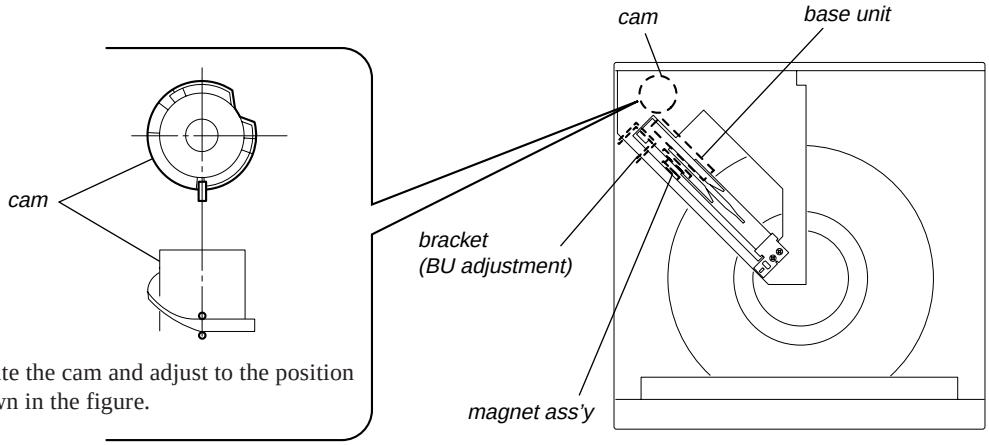
(4) Moving the disc table right and left with a hand after the screw is fixed, the table will move by the play of a disc table. If the LEDs light up alternately, the adjustment will be performed correctly.





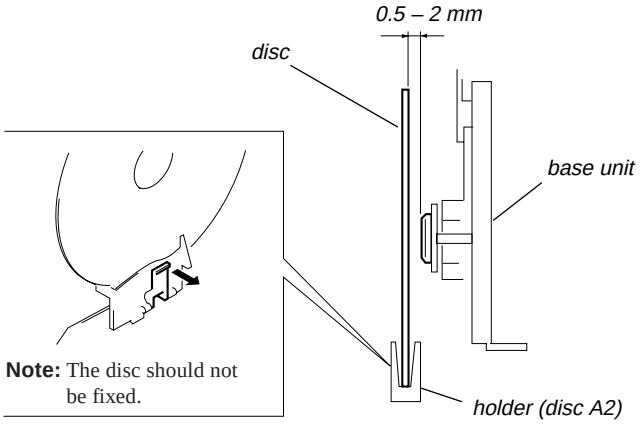
(3) Loosen the fixed screw by 60° to 90°, and use a tapering screwdriver to adjust the screw as shown in the figure.
Move the bracket (sensor) with the tapering screwdriver little by little, and fix the fixed screw at where the play button's LED (green) is switched to the pause button's LED (orange) (or its reverse).

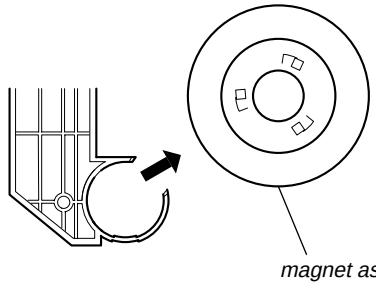
PULLY AND DISC CENTER HOLE ALIGNMENT



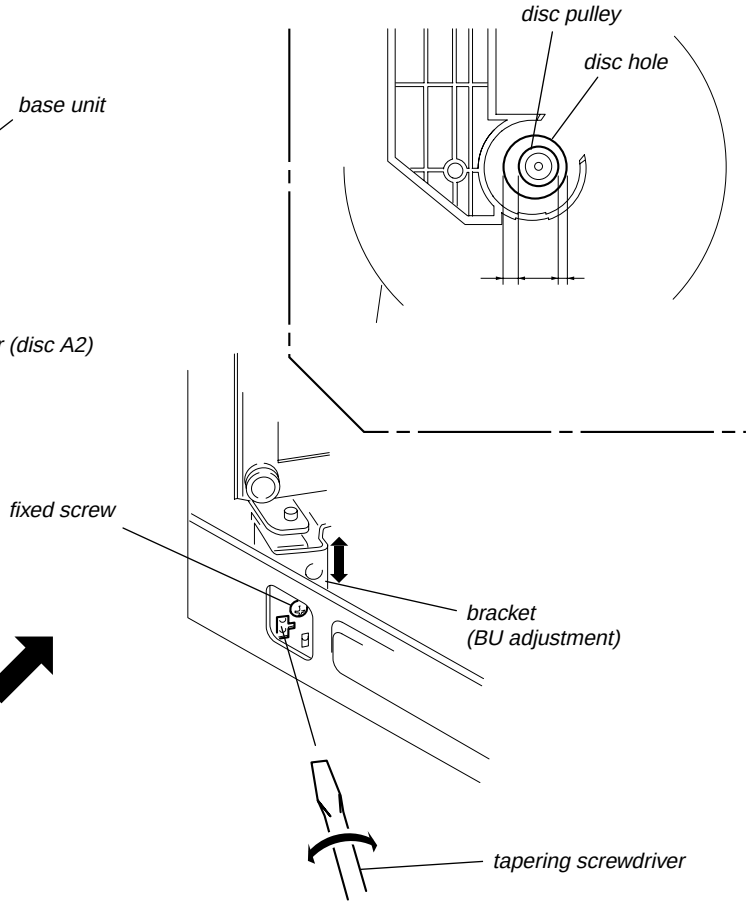
(1) Rotate the cam and adjust to the position shown in the figure.

(2) Check that the state is as shown in the figure.



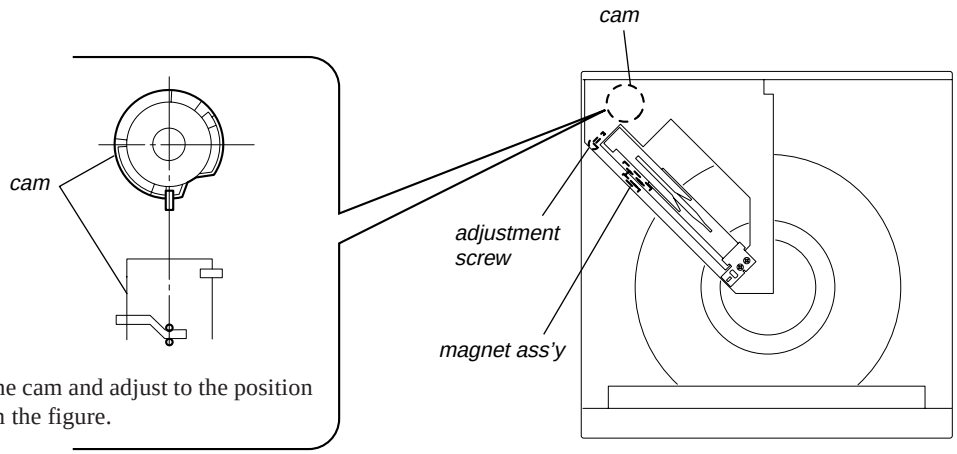


(3) Remove the Magnet ass'y.

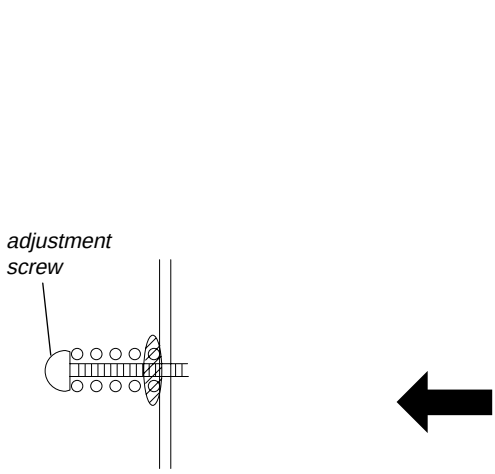


(4) Loosen the fixed screw by 60° to 90°, and move and adjust the bracket (BU adjustment) up and down using a tapering screwdriver so that the positions of the disc hole and disc pulley become A=B or between A:B=2:1 and 1:2.

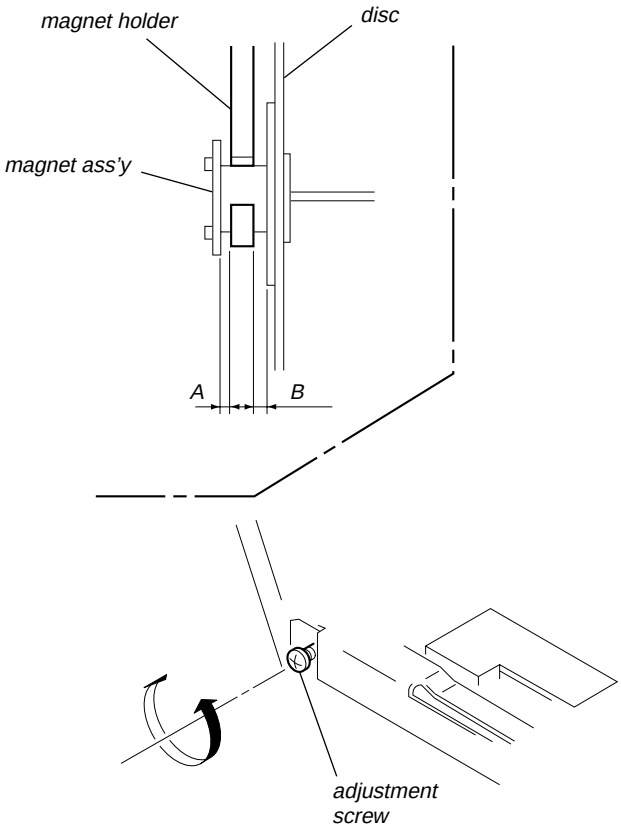
MAGNET ASS'Y ALIGNMENT



(1) Rotate the cam and adjust to the position shown in the figure.



(3) Apply suitable locking compaund to the ▨ part after adjusting.

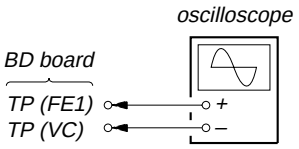


(2) Rotate the adjustment screw until A=B or between A:B=2:1 and 1:2

SECTION 6
ELECTRICAL ADJUSTMENTS

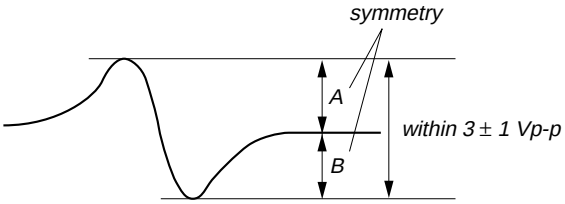
Note:
1. CD Block is basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than 10MΩ impedance.
4. Clean the object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

S-Curve Check



Procedure :
1. Connect oscilloscope to test point TP (FE1) on BD board.
2. Connect test point TP (ADJ) on MAIN board to ground with lead wire.
3. Turn I/⏻ button on to set the ADJ mode.
4. Put disc (YEDS-18) in and playback.
   Press the CHECK button.
5. Check the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 3 ± 1 Vp-p.

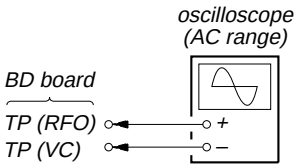
S-curve waveform



6. After check, remove the lead wire connected in step 2.

Note: • Try to measure several times to make sure than the ratio of A : B or B : A is more than 10 : 7.
• Take sweep time as long as possible and light up the brightness to obtain best waveform.

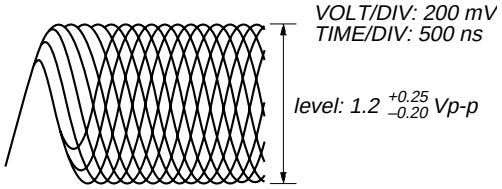
RF Level Check



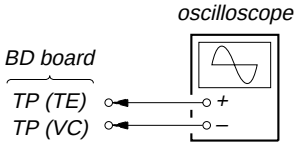
Procedure :
1. Connect oscilloscope to test point TP (RFO) on BD board.
2. Turn I/⏻ button on.
3. Put disc (YEDS-18) in to play the number five track.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

Note: A clear RF signal waveform means that the shape "◊" can be clearly distinguished at the center of the waveform.

RF signal waveform

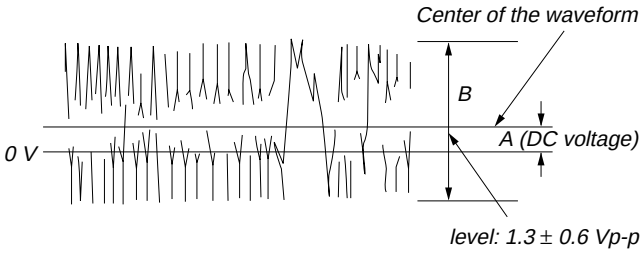


E-F Balance Check



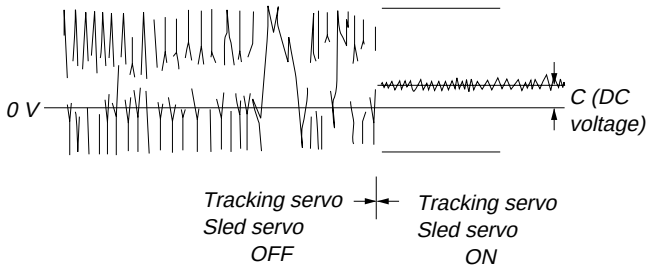
Procedure :
1. Connect oscilloscpe to test point TP (TE) on BD board.
2. Connect the test point TP (ADJ) on MAIN board to the ground with a lead wire.
3. Turn the I/⏻ button on to set the ADJ mode.
4. Put disc (YEDS-18) in to play the number five track.
5. Press the GROUP 3 button. (The tracking servo and the sledding servo are turned OFF.)
6. Check the level B of the oscilliscope's waveform and the A (DC voltage) of the center of the Traverse waveform.
   Confirm the following :
   A/B x 100 = less than ± 22%

Traverse waveform



7. Press the GROUP 8 button. (The tracking servo and sledding servo are turned ON.) Confirm the C (DC voltage) is almost equal to the A (DC voltage) is step 6.

Traverse waveform

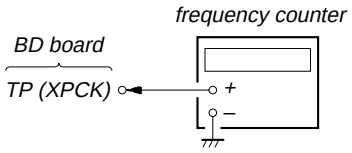


8. Disconnect the lead wire of TP (ADJ) connected in step 1.

RF PLL Free-run Frequency Check

Procedure :

1. Connect frequency counter to test point TP (XPCK) with lead wire.



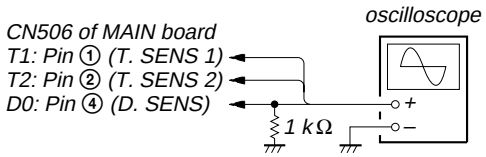
2. Turn I/⏻ button on.
3. Put the disc (YEDS-18) in to play the number five track. Confirm that reading on frequency counter is 4.3218MHz.

Disc Sensor Adjustment

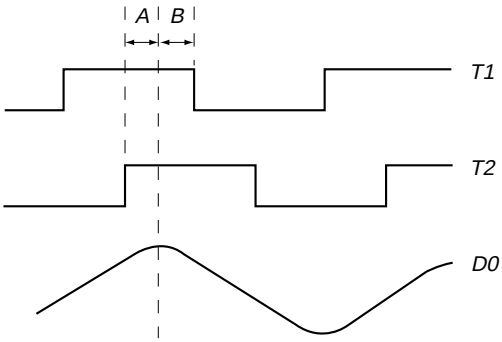
Perform this adjustment after completing all adjustments of the mechanism section.

If not performed accurately, the presence of the disc may not be detected properly.

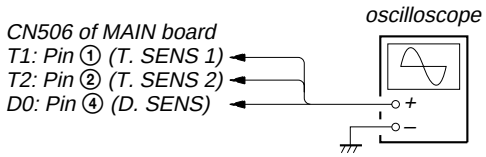
Connection 1:



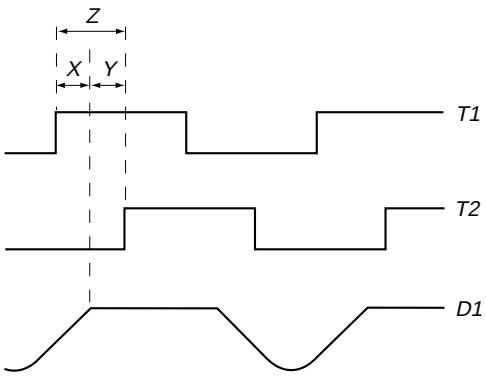
Waveform 1:



Connection 2:

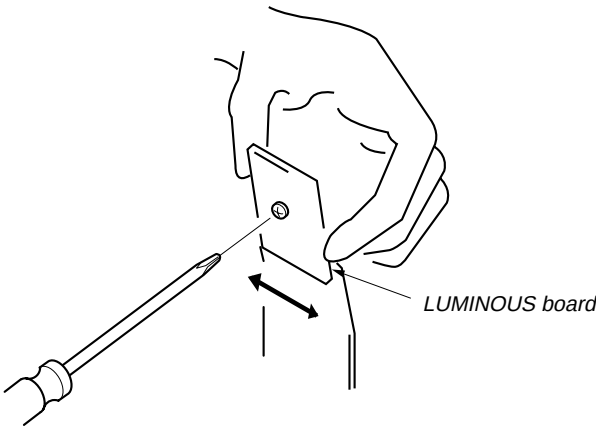


Waveform 2



Procedure:

1. Connect the oscilloscope to Pins ①, ②, and ④ of CN506 of the MAIN board. Also connect a 1 kΩ resistor to Pin ④ at the same time. (Connection 1)
2. Check that no discs are loaded in the unit, and press the I/⏻ button while pressing the INPUT button.
3. The rotary table will continue rotating in the clockwise direction.
4. Observe the waveform at that time on the oscilloscope.
5. Loosen the screw securing the LUMINOUS board slightly.
6. Slide the LUMINOUS board to the left and right so that the peak of the D0 waveform is at the center between the descending point of the T1 waveform and ascending point of the T2 waveform. (Waveform 1) After adjusting, apply locking compound.



7. Disconnect the resistor connected to Pin ④ of CN506 of the MAIN board. (Connection 2)
8. Observe the waveform on the oscilloscope. (Waveform 2)
9. Adjust RV501 of the MAIN board so that the waveform on the oscilloscope satisfies the following adjustment value.
10. After the adjustment, load a disc only in slit 1, close the front cover, and press the I/⏻ button to turn off the power.
11. Press the I/⏻ button while pressing the PUSH ENTER button to turn on the power.
12. If the rotary table makes round, and "YES" is displayed on the fluorescent indicator tube after it stops, it means that the adjustment has been performed properly.

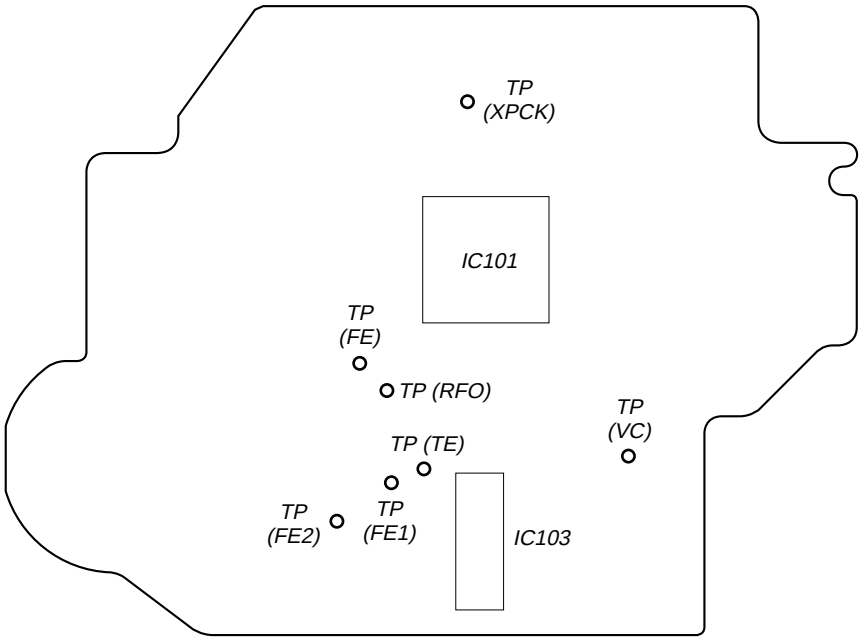
Adjustment value:

At the shoulder part of waveform D1, T1 becomes H and T2 becomes L, and at the same time, the Y width must not be smaller than 1/4 of the Z width.

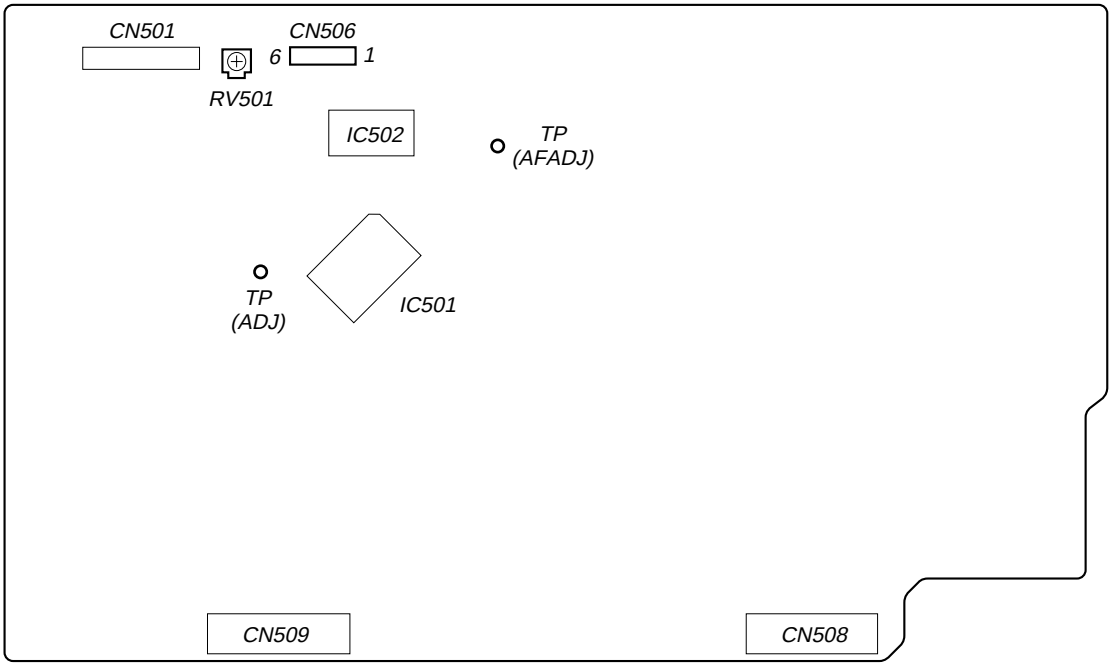
In order to satisfy this value more easily, adjust so that X=Y approximately and observe the deviation of the waveform.

Adjustment Location:

[BD BOARD] – Side B –

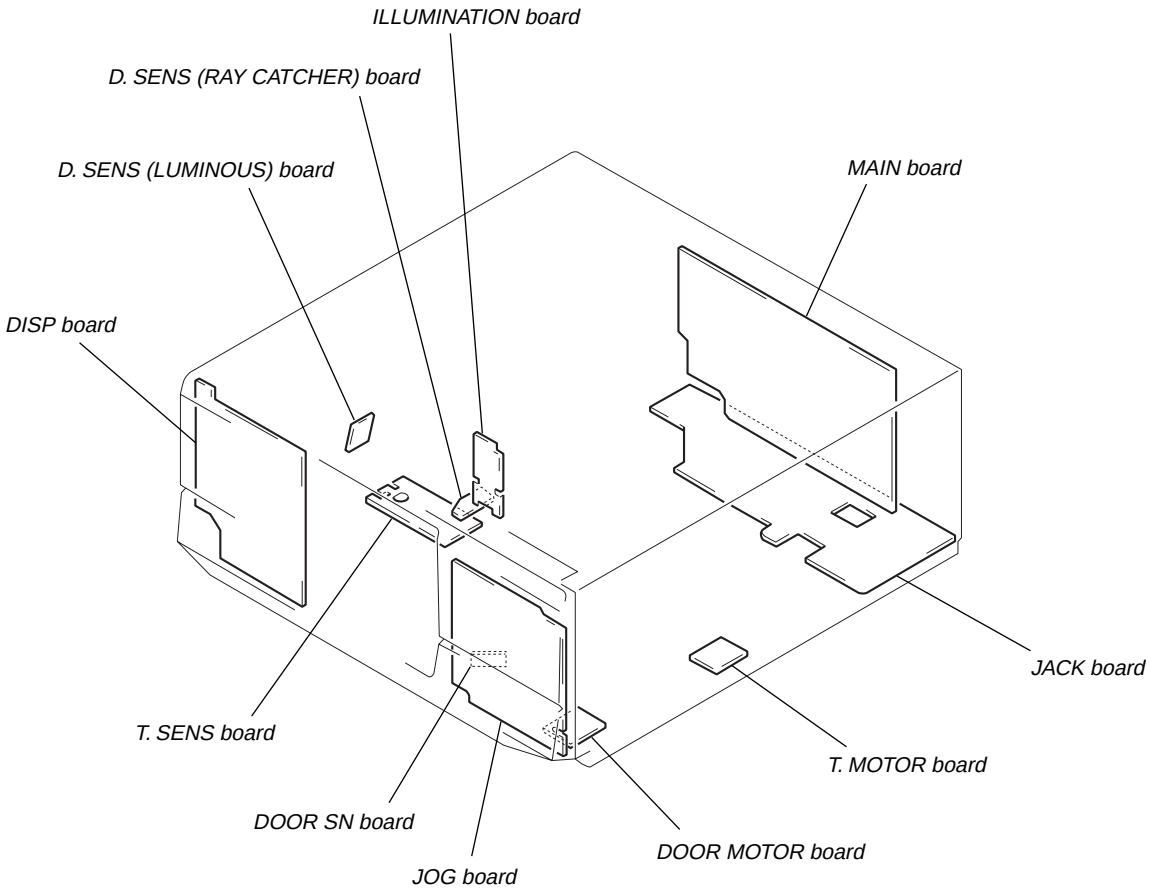


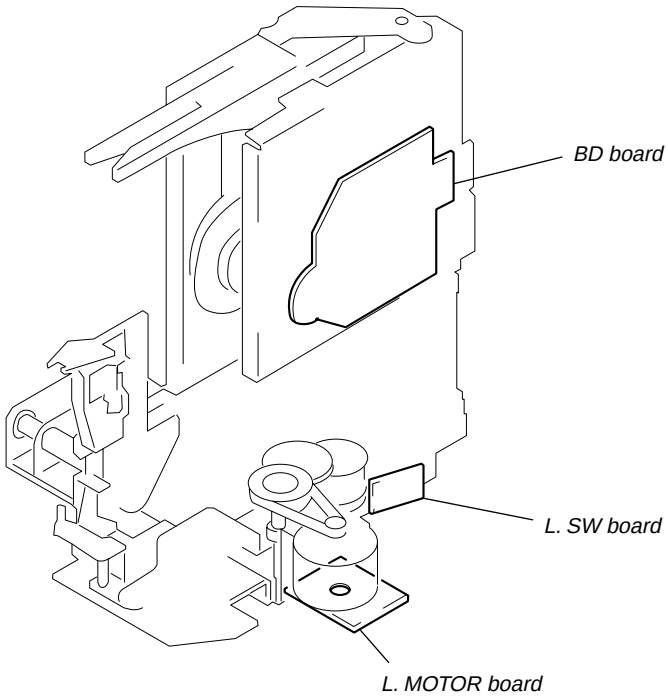
[MAIN BOARD] – Component Side –



SECTION 7
DIAGRAMS

• Circuit Boards Location





7-1. NOTE FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

Note on Schematic Diagram:

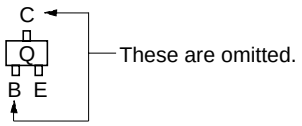
- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- ▭ : panel designation.

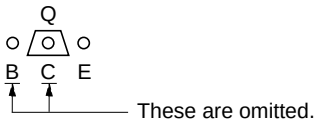
Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

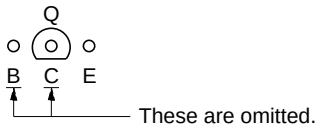
- B+ : B+ Line.
- B− : B– Line.
- ▭ : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark: PLAY
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope.
  Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : CD
  ⇨ : digital out
- Abbreviation
  AED : North European
  AUS : Australian model.
  CND : Canadian model.
  E2 : 120 V AC Area in E model.
  E3 : 240 V AC Area in E model.
  SP : Singapore model.

Note on Printed Wiring Boards:

- ○——— : parts extracted from the component side.
- ——— : parts extracted from the conductor side.
- △ : internal component.
- ▒▒ : Pattern from the side which enables seeing.
- ▨ : Solder bridge.
- Indication of transistor.



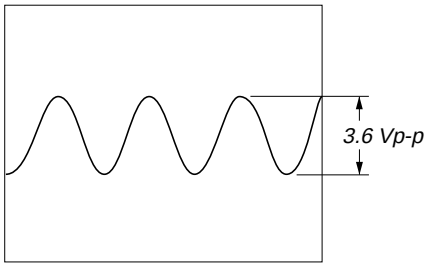




• Waveforms

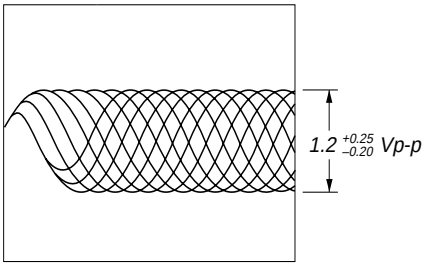
– BD Section –

❶ IC101 ⑯ (XTAI)

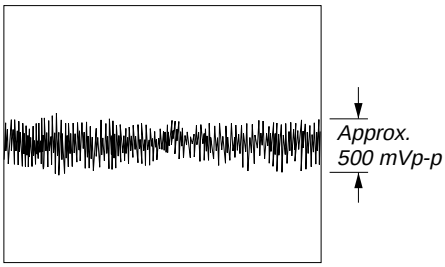


16.9344 MHz

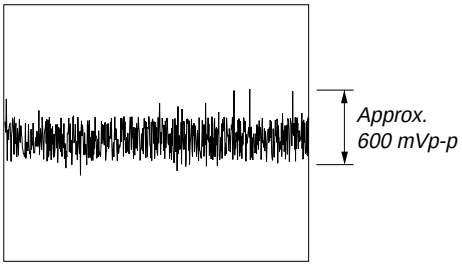
❷ IC101 ㊿ (RFAC)
500 mV/DIV, 1 µs/DIV



❸ IC101 ㊶ (TE)
200 mV/DIV, 1 µs/DIV

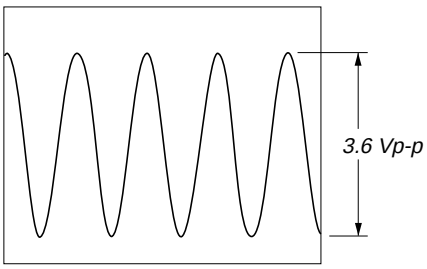


❹ IC101 ㊴ (FE)
200 mV/DIV, 10 µs/DIV



– MAIN Section –

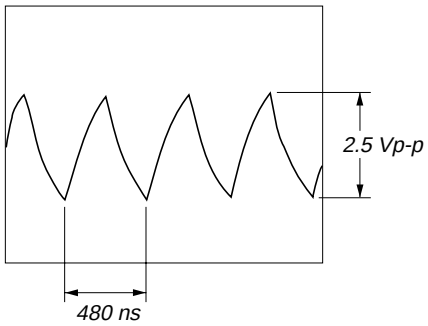
❶ IC501 ㉛ (EXTAL)



10 MHz

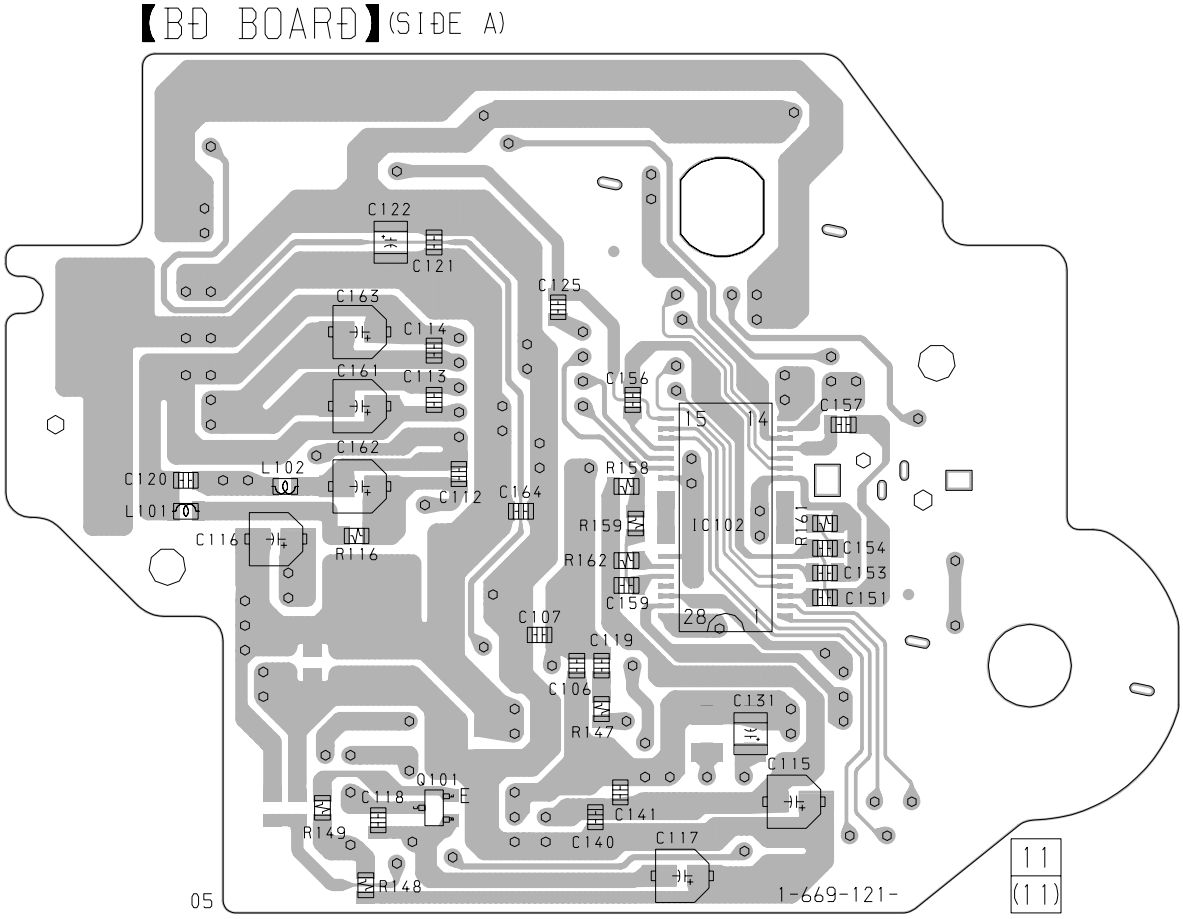
– PANEL Section –

❶ IC701 ㊽ (OSC0)

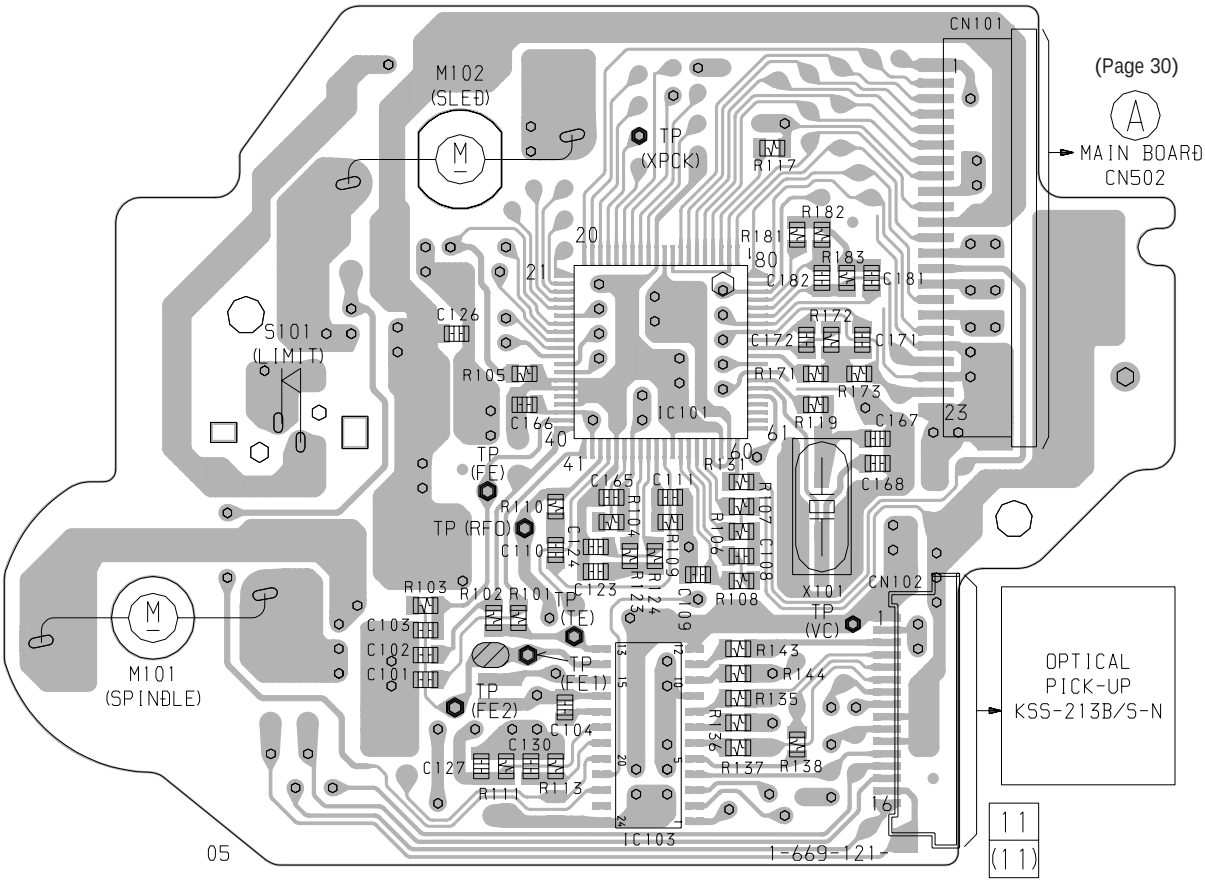


7-2. PRINTED WIRING BOARD – BD Section –

• See page 22 for Circuit Boards Location.

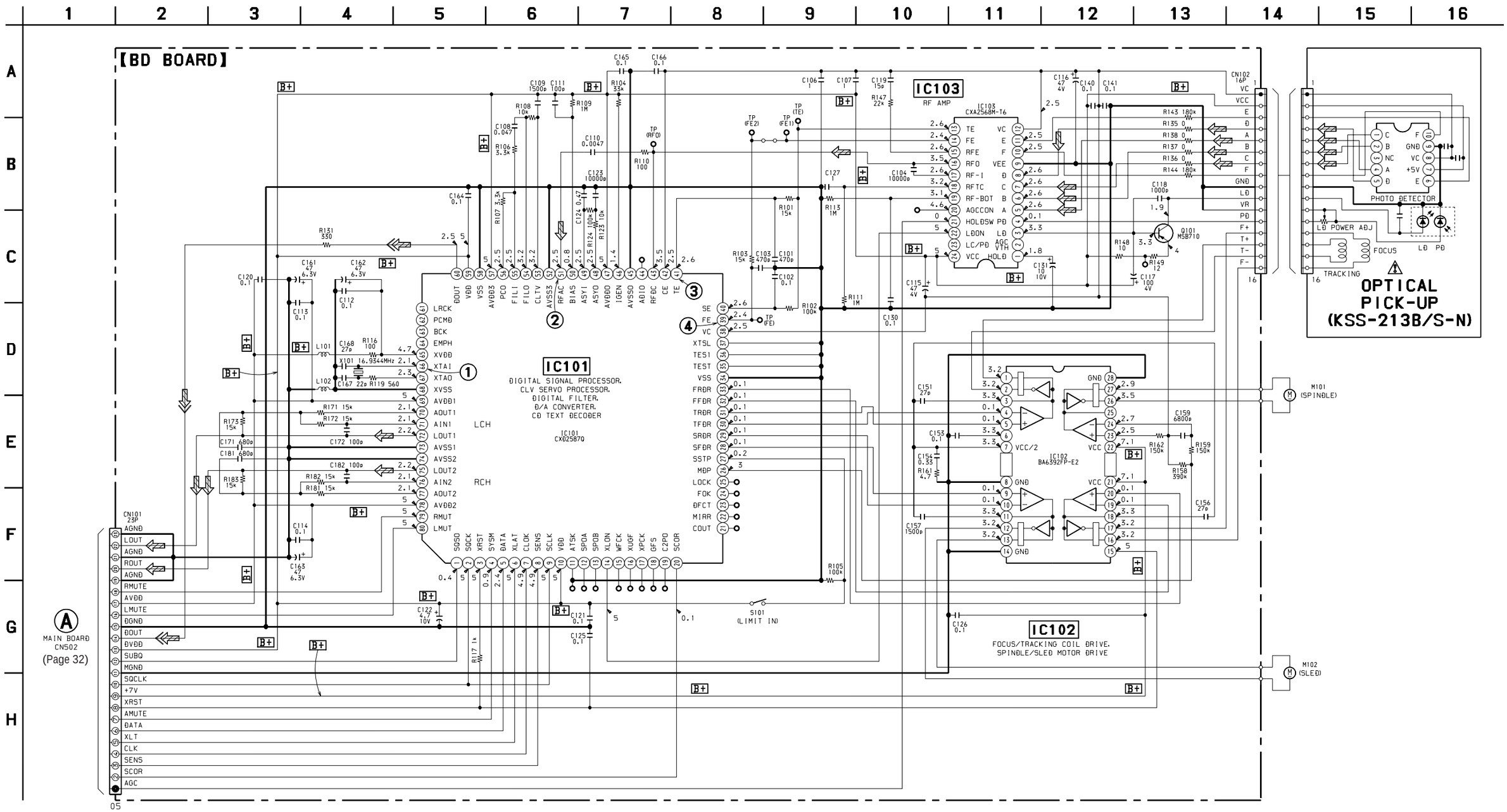


【BD BOARD】(SIDE B)



7-3. SCHEMATIC DIAGRAM – BD Section –

• See page 24 for Waveforms. • See page 44 for IC Block Diagrams.



- no mark: PLAY
- Signal path.
  - ⇨ : CD
  - ⇛ : digital out

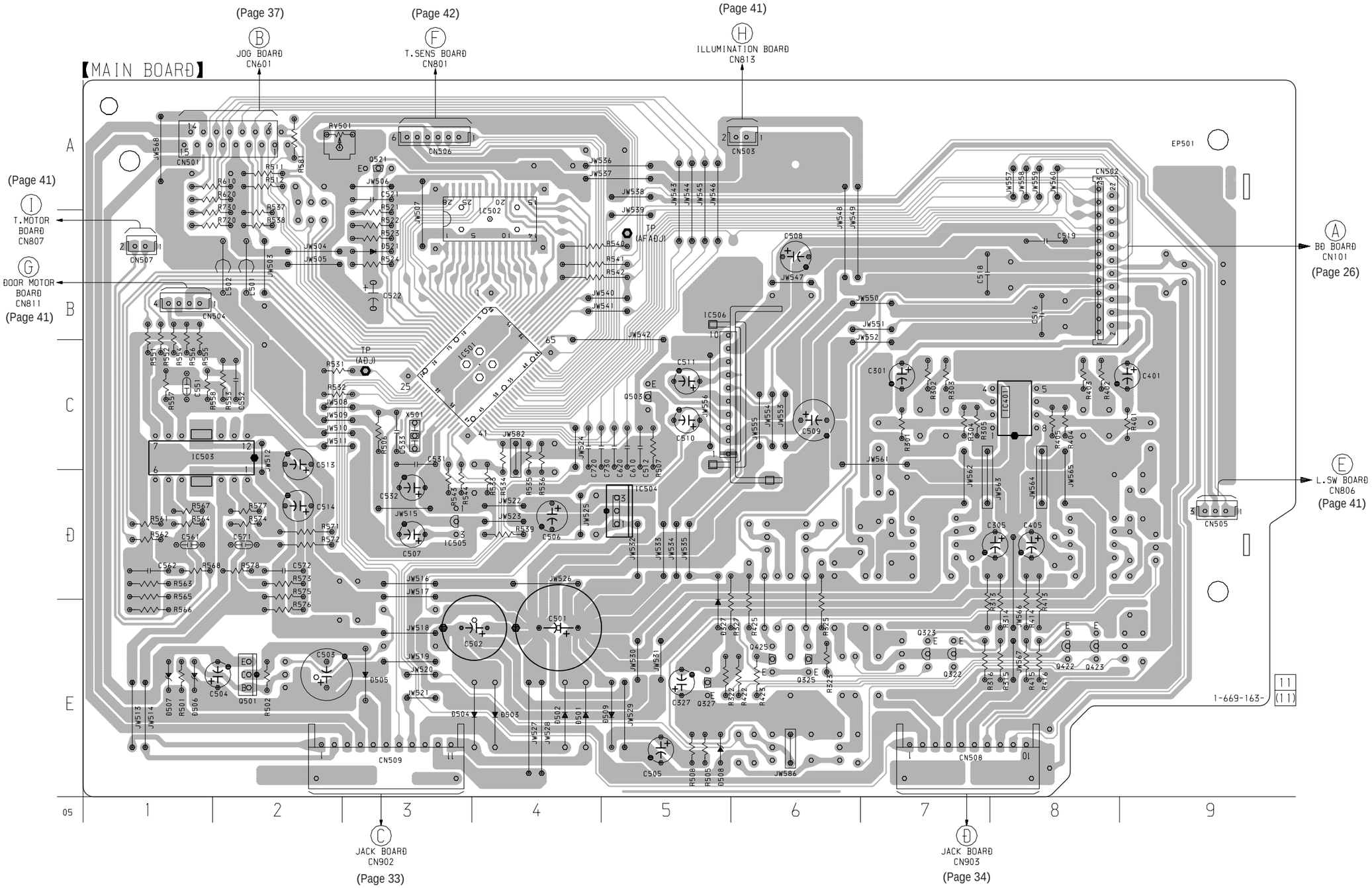
Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

7-4. PRINTED WIRING BOARD – MAIN Section –

• See page 22 for Circuit Boards Location.

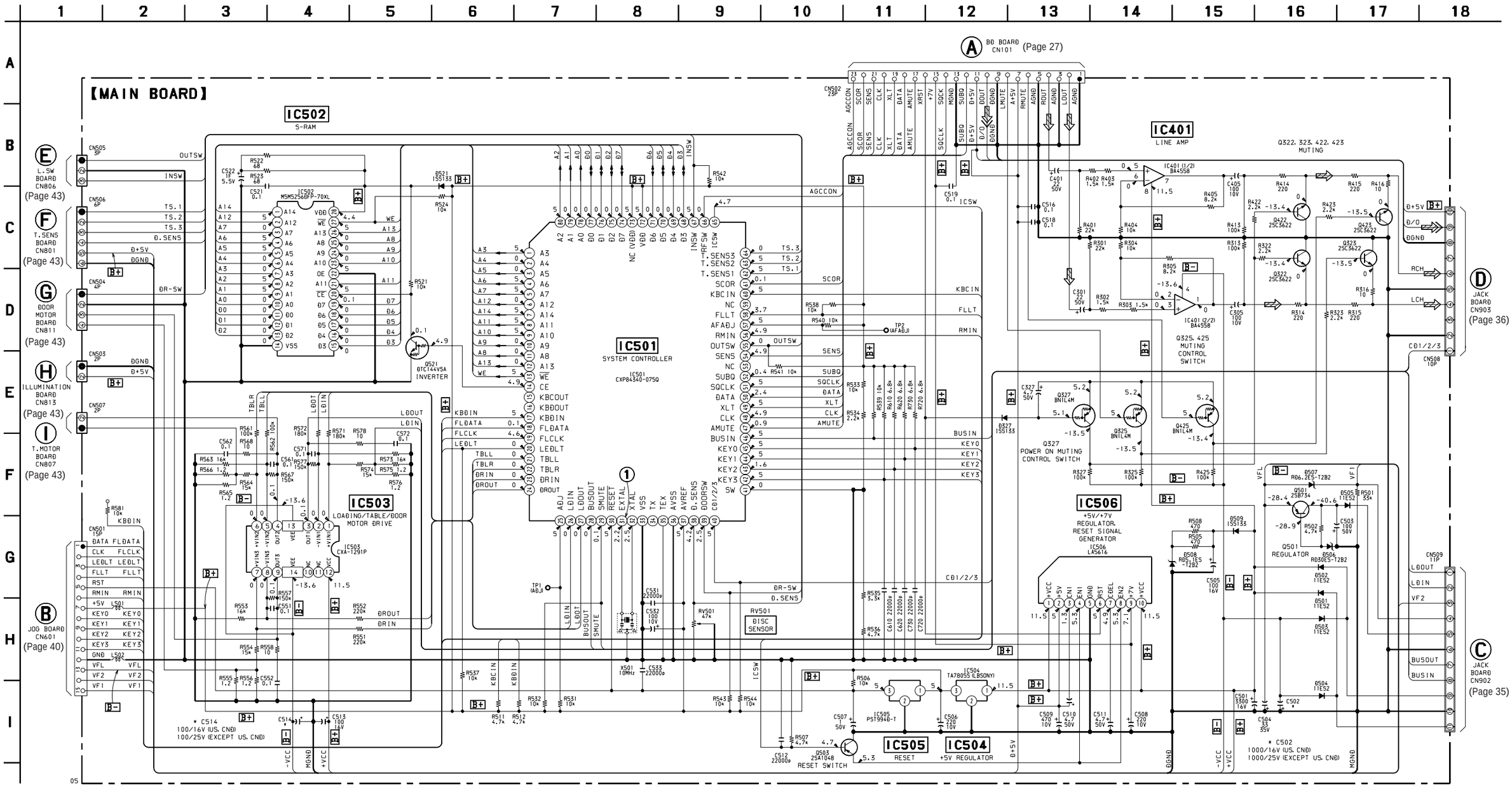
• **Semiconductor Location**

Ref. No.	Location
D327	E-5
D501	E-4
D502	E-4
D503	E-4
D504	E-4
D505	E-3
D506	E-1
D507	E-1
D508	E-5
D509	E-5
D521	B-3
IC401	C-8
IC501	C-3
IC502	B-4
IC503	C-1
IC504	D-5
IC505	D-3
IC506	C-5
Q322	E-7
Q323	E-7
Q325	E-6
Q327	E-5
Q422	E-8
Q423	E-8
Q425	E-6
Q501	E-2
Q503	C-5
Q521	A-3



7-5. SCHEMATIC DIAGRAM – MAIN Section –

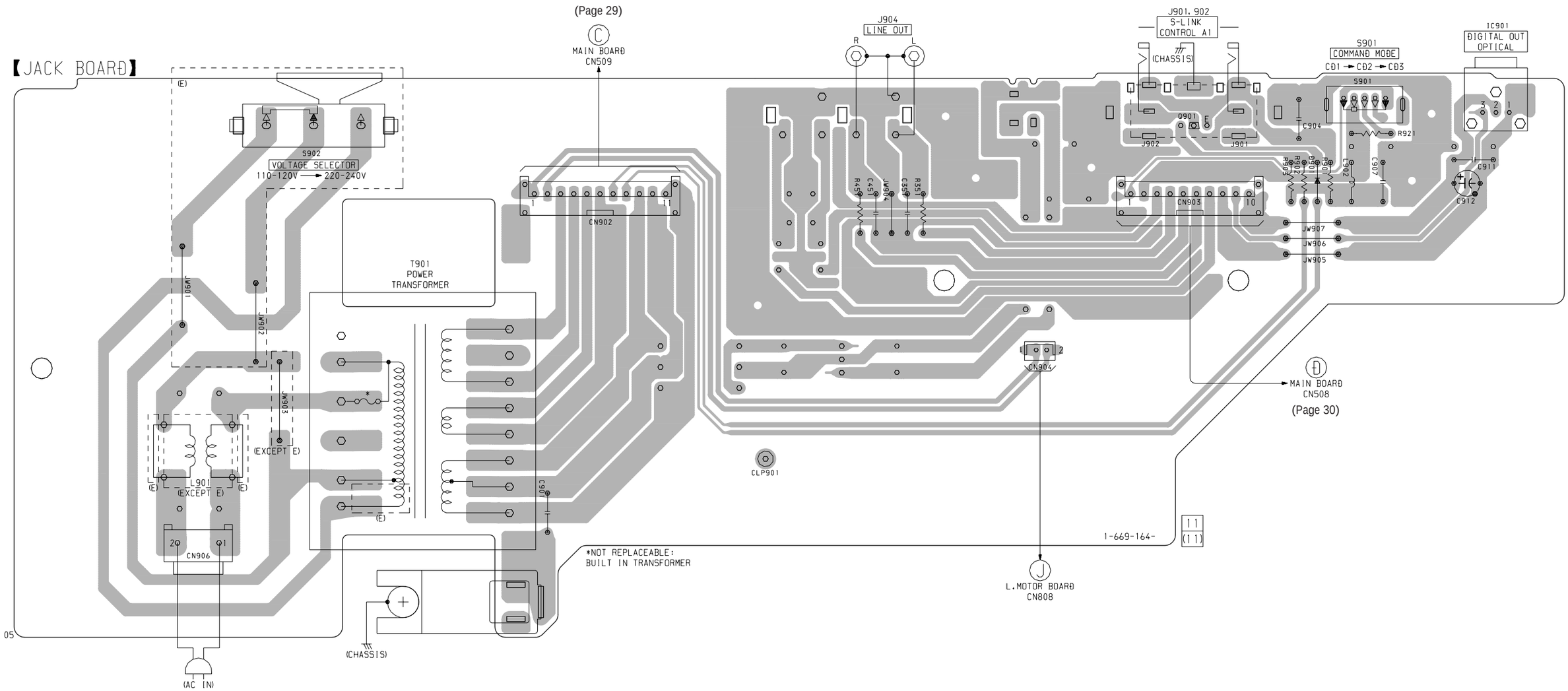
• See page 24 for Waveforms. • See page 45 for IC Block Diagrams.

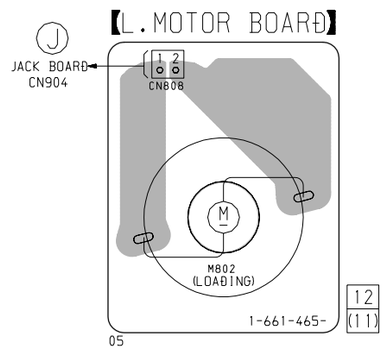


- no mark: PLAY
- Signal path.
  - ⇛ : CD
  - ⇛ : digital out

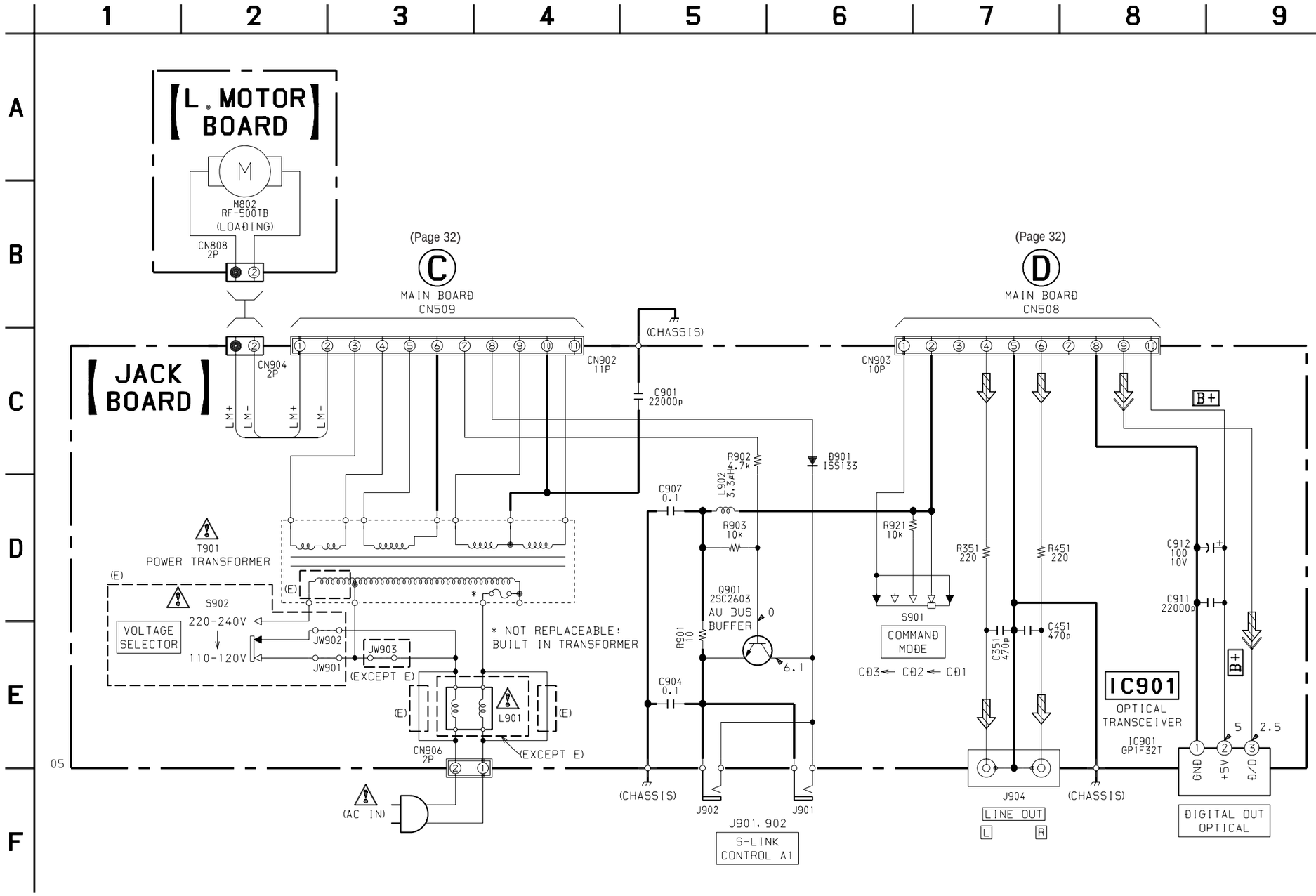
7-6. PRINTED WIRING BOARDS – JACK Section –

• See page 22 for Circuit Boards Location.





7-7. SCHEMATIC DIAGRAM – JACK Section –

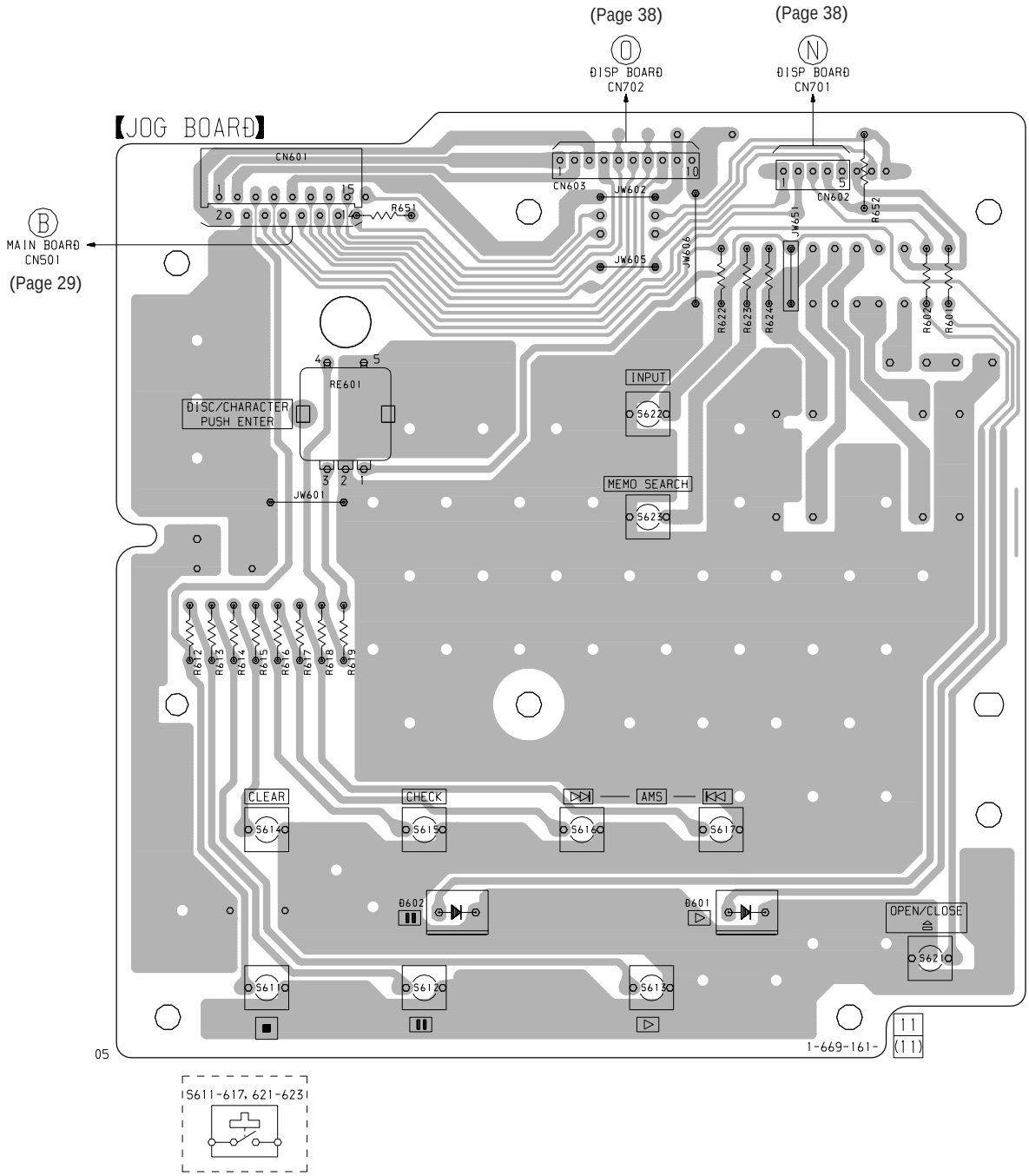


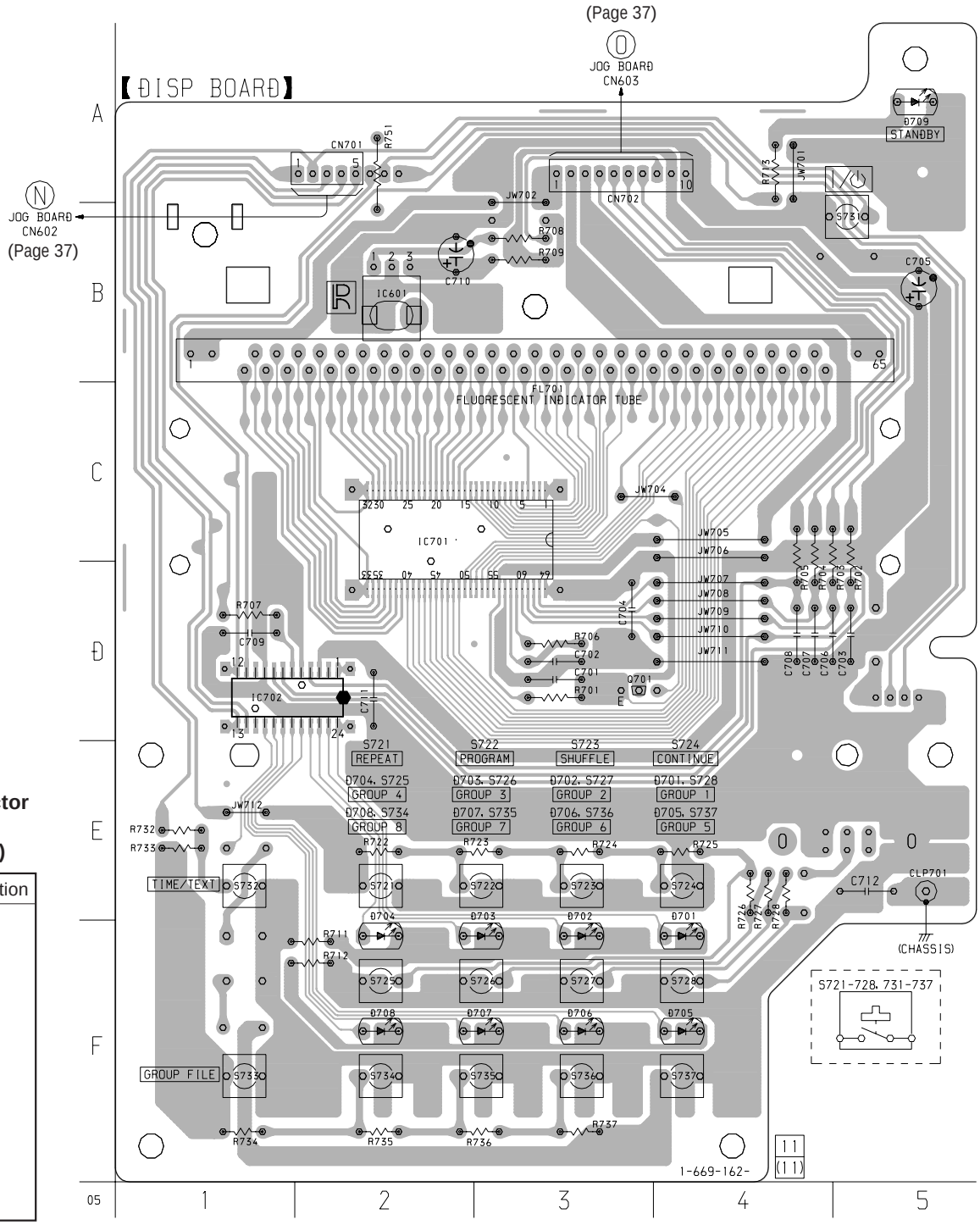
- no mark: PLAY
- Signal path.
  ⇨ : CD
  ⇛ : digital out

Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

7-8. PRINTED WIRING BOARDS – PANEL Section –

• See page 22 for Circuit Boards Location.



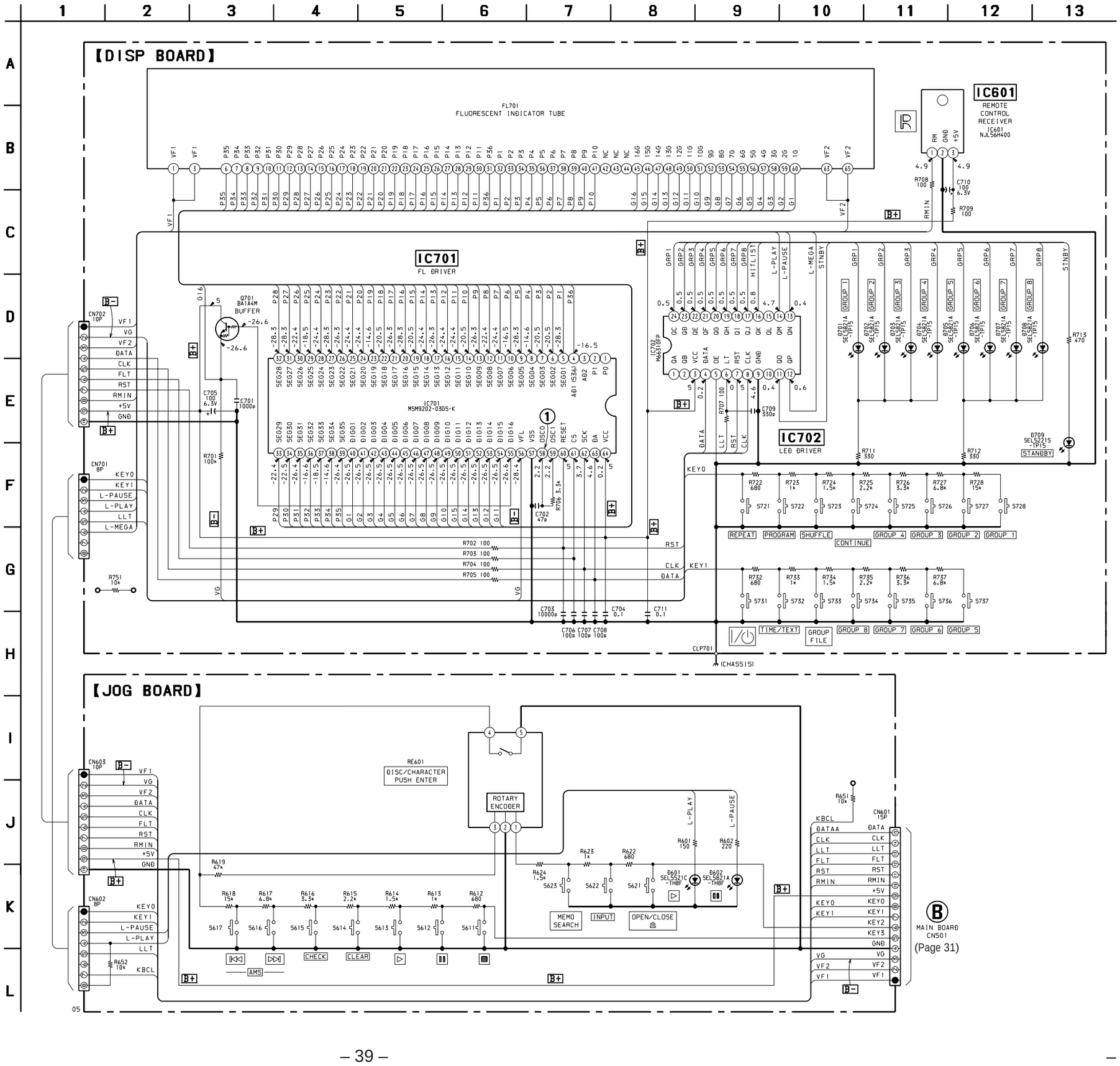


- **Semiconductor Location (DISP Board)**

Ref. No.	Location
D701	F-4
D702	F-3
D703	F-3
D704	F-2
D705	F-4
D706	F-3
D707	F-3
D708	F-2
D709	A-5
IC601	B-2
IC701	C-2
IC702	D-1
Q701	D-3

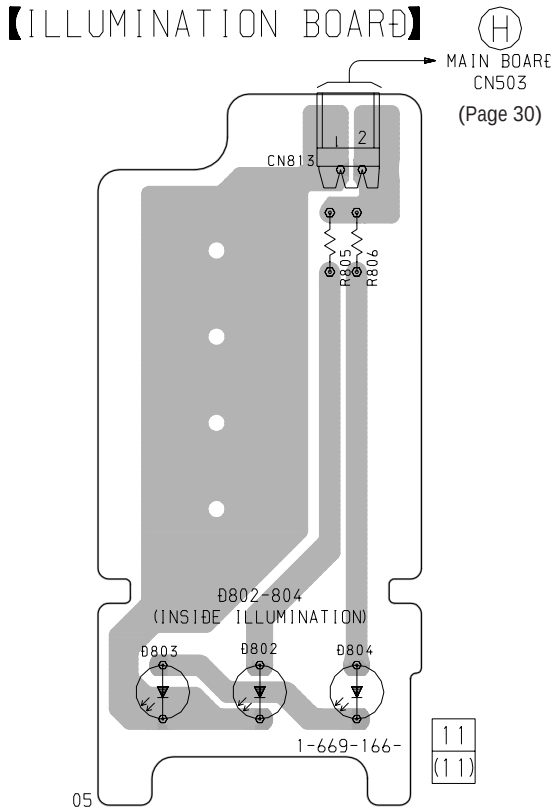
7-9. SCHEMATIC DIAGRAM – PANEL Section –

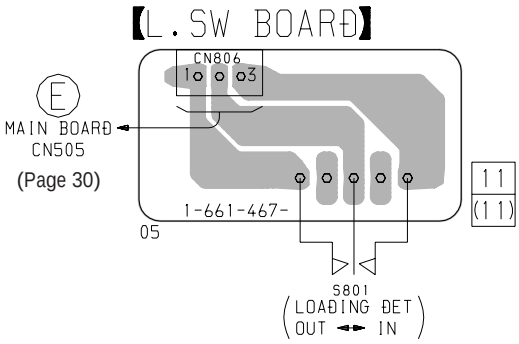
• See page 24 for Waveforms. • See page 46 for IC Block Diagrams.

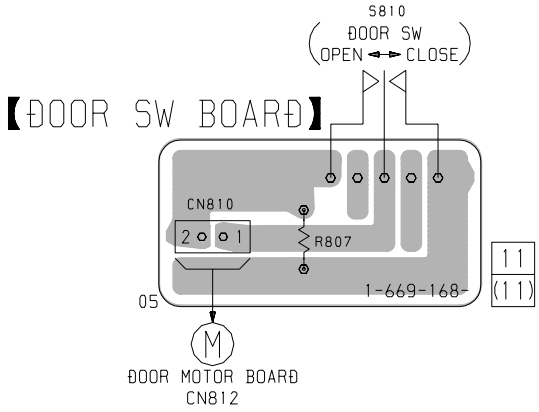


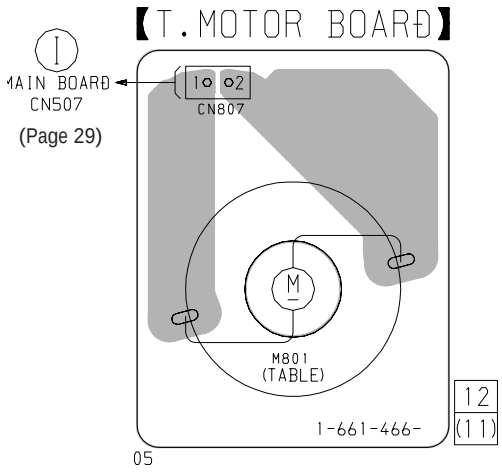
7-10. PRINTED WIRING BOARDS – SENSOR/MOTOR Section –

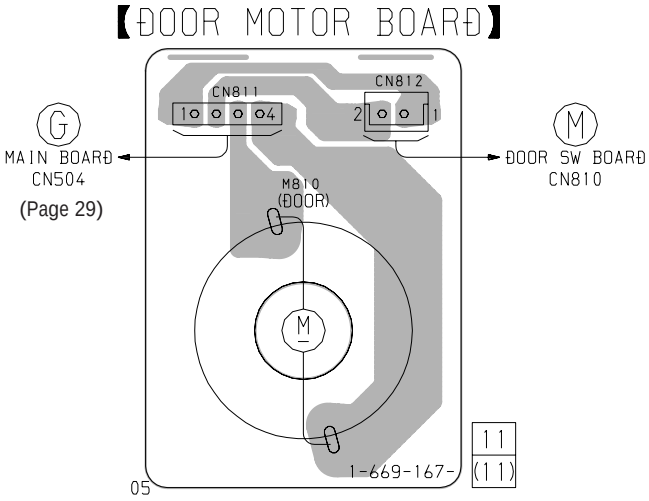
• See page 22 for Circuit Boards Location.



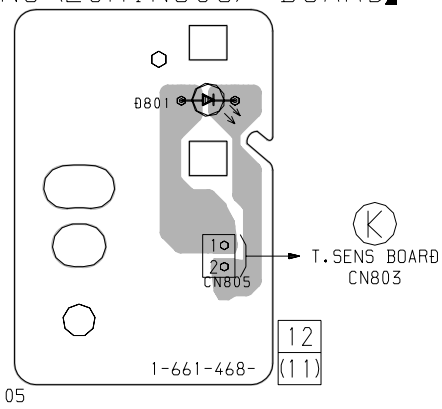




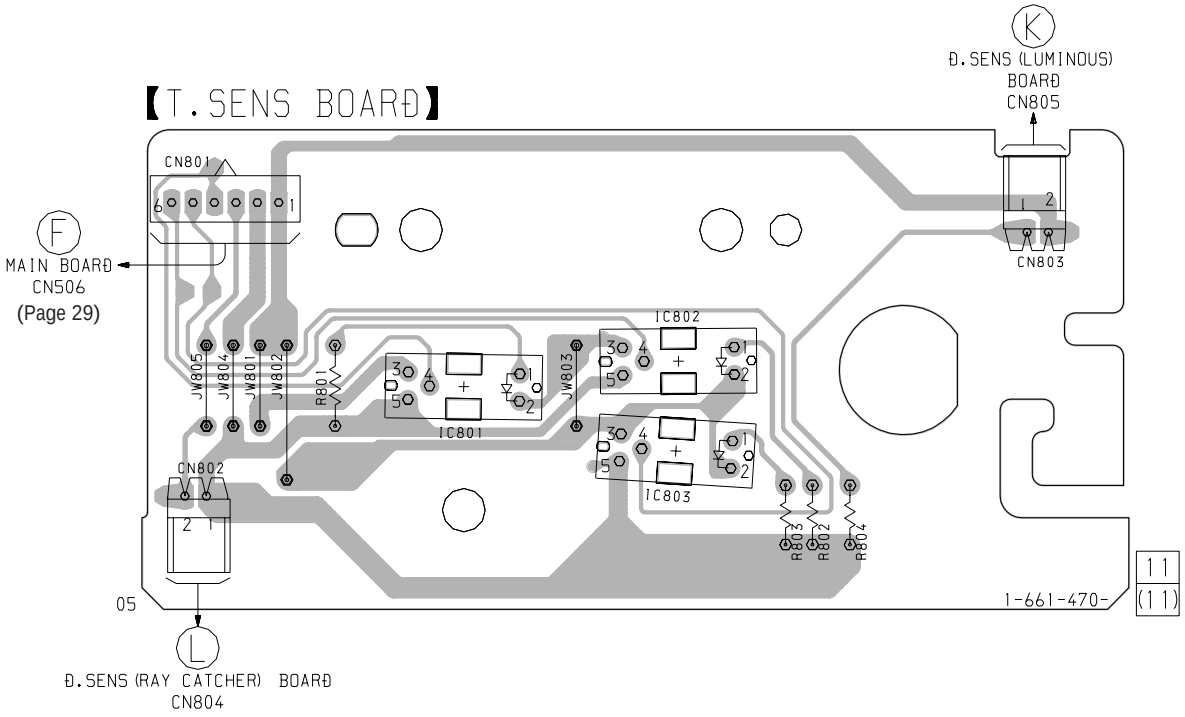




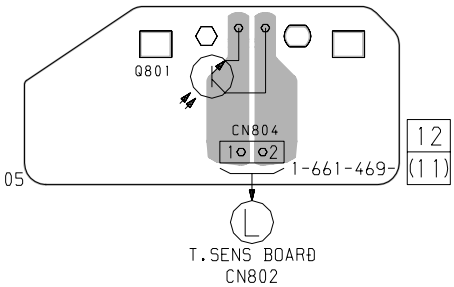
【Đ.SENS (LUMINOUS) BOARĐ】



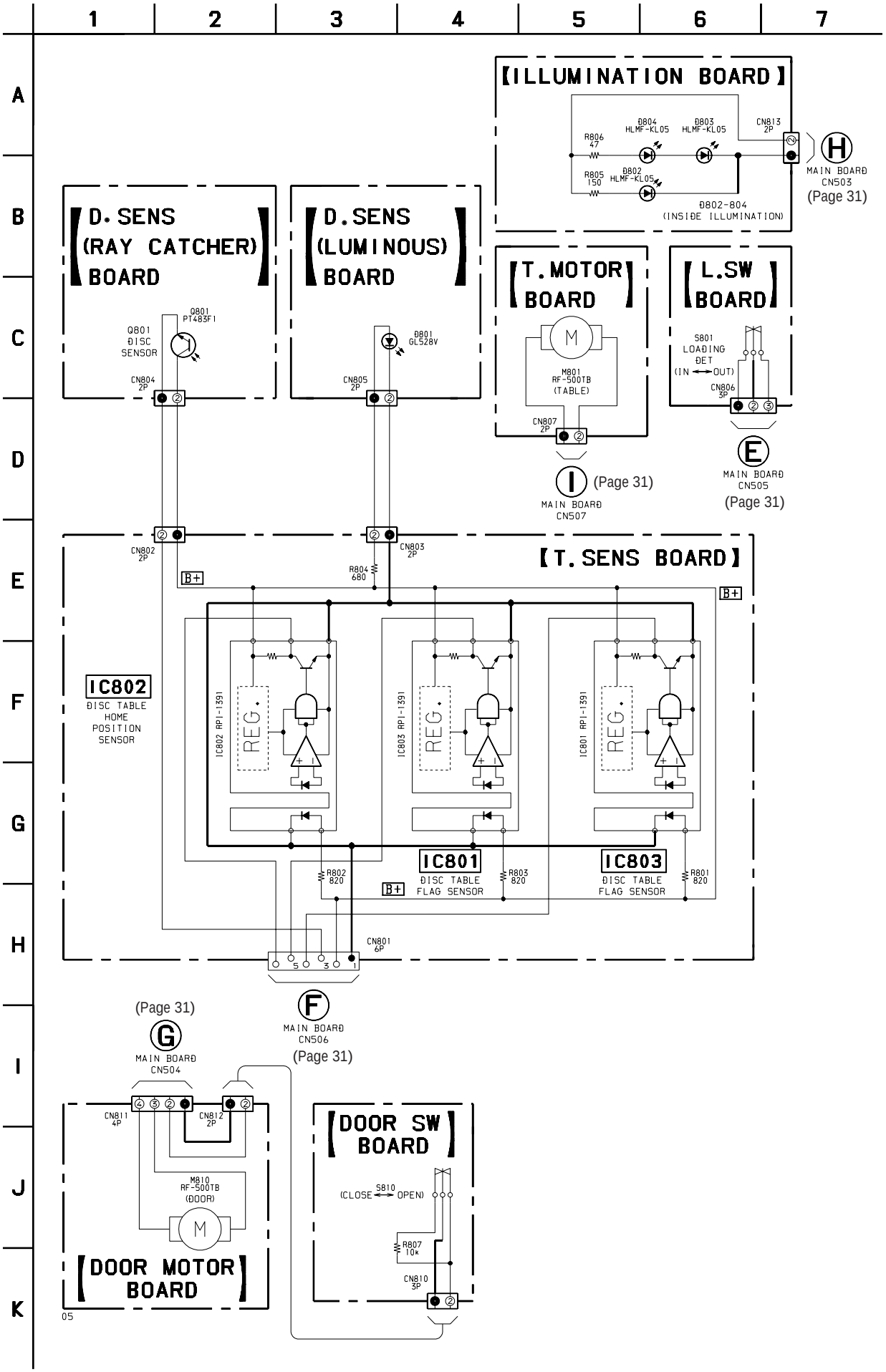
【T.SENS BOARĐ】



【Đ.SENS (RAY CATCHER) BOARĐ】

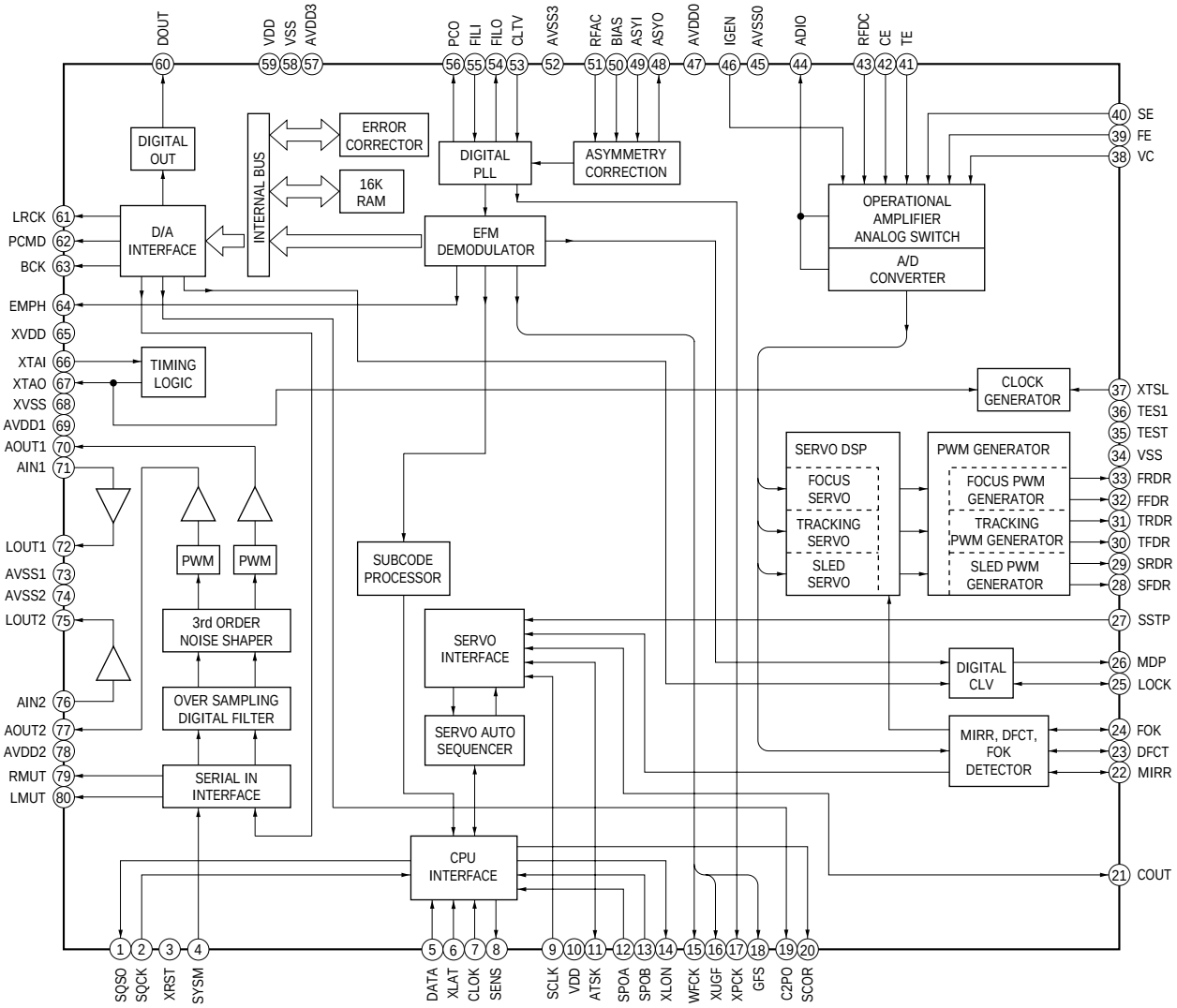


7-11. SCHEMATIC DIAGRAM – SENSOR/MOTOR Section –

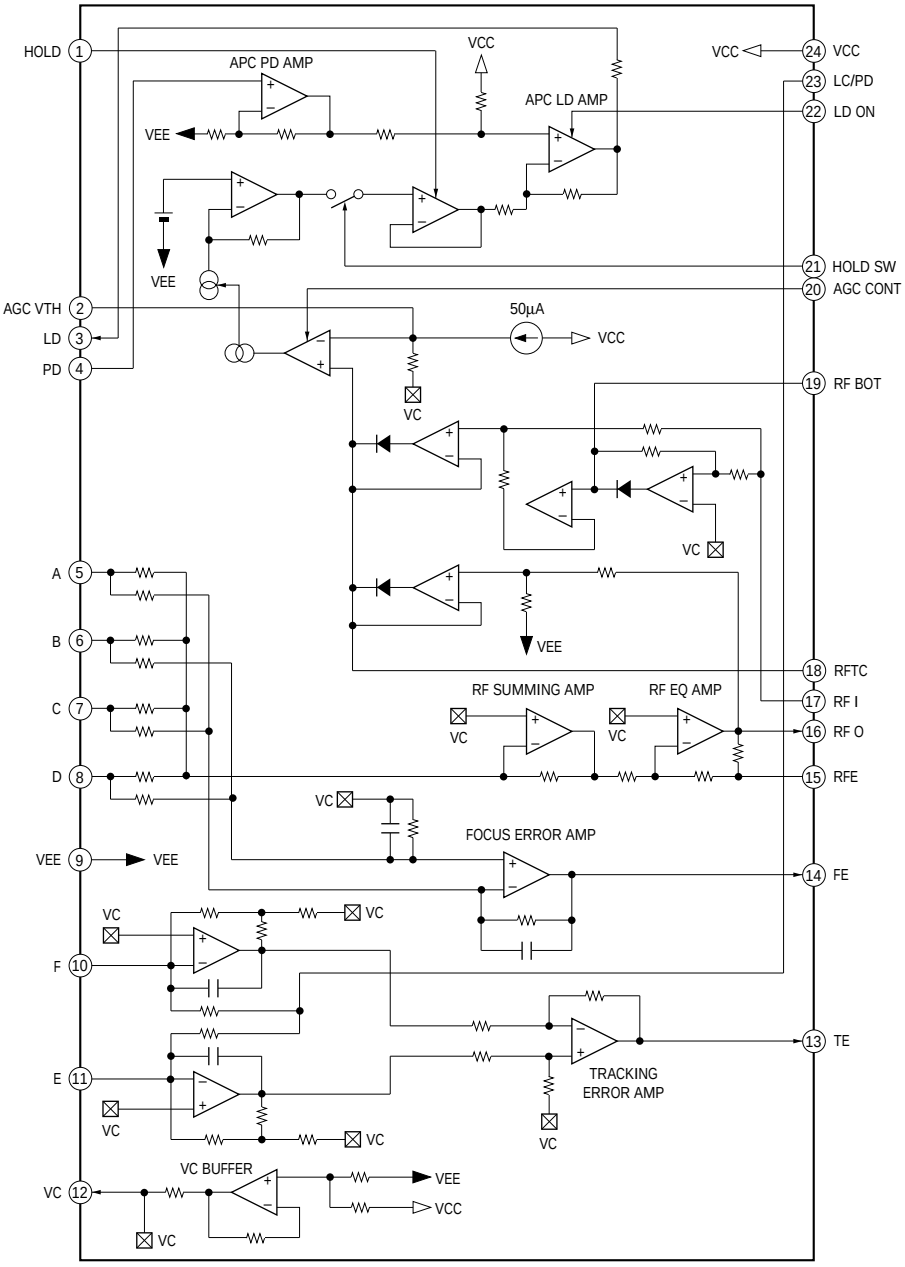


• IC Block Diagrams
– BD Board –

IC101 CXD2587Q

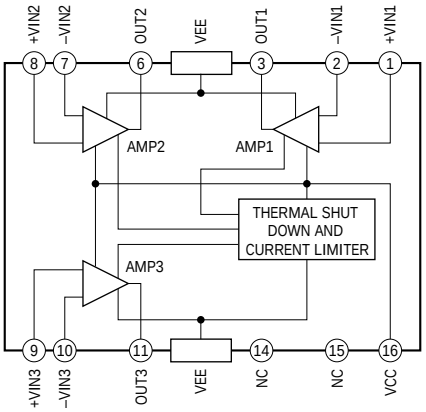


IC103 CXA2568M-T6

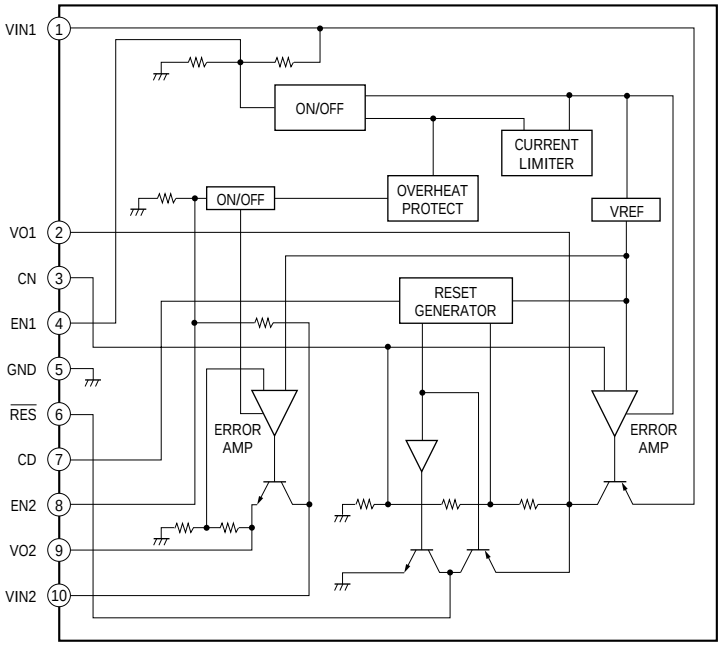


– MAIN Board –

IC503 CXA1291P

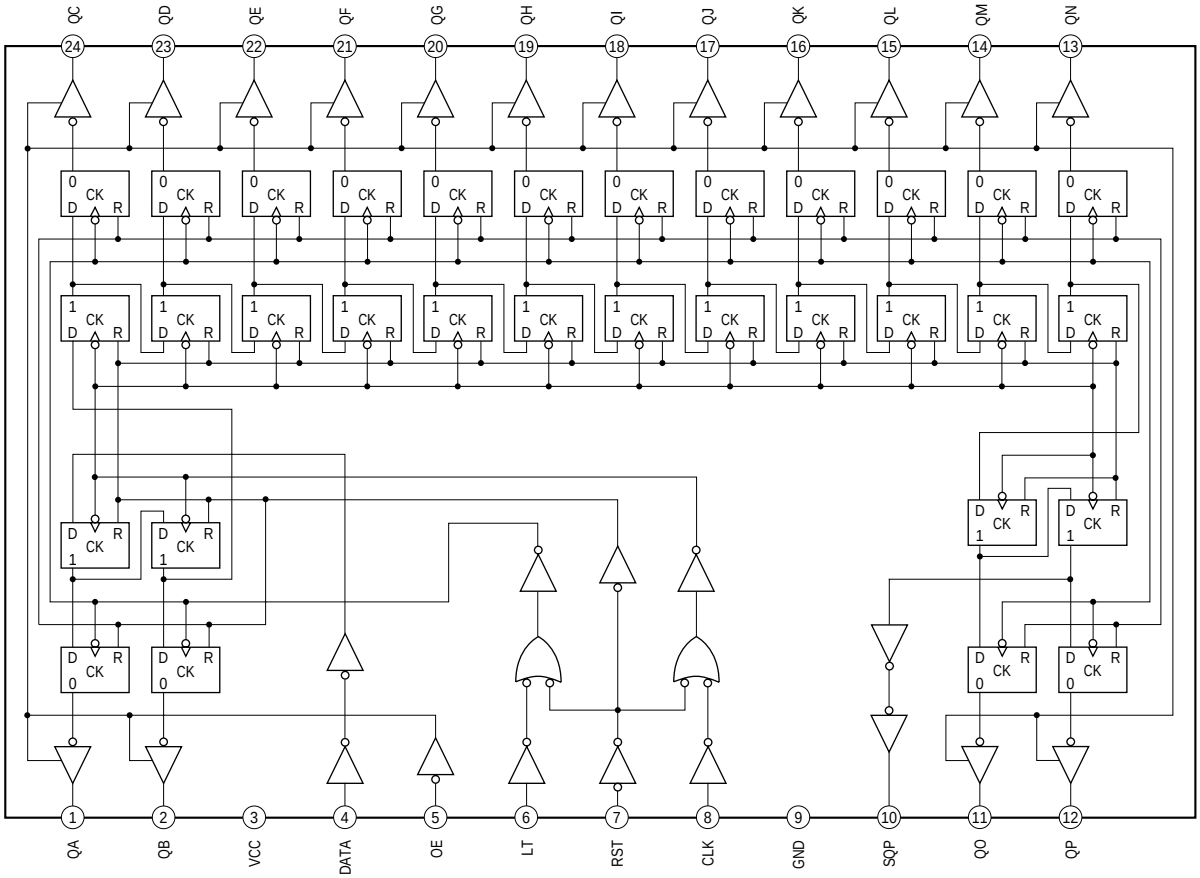


IC506 LA5616



– DISP Board –

IC702 M66310FP



7-12. IC PIN FUNCTION DESCRIPTION

• MAINN BOARD IC501 CXP84340-075Q (SYSTEM CONTROLLER)

Pin No.	Pin Name	I/O	Function
1 to 5	A3 to A7	O	Address signal output to the static RAM (IC502)
6	A12	O	
7	A14	O	
8 to 11	A11 to A8	O	
12	A13	O	
13	$\overline{WE}$	O	Data write enable signal output to the static RAM (IC502) "L" active
14	CE	O	Chip enable signal output to the static RAM (IC502) "H" active
15	KBCOUT	O	Serial data transfer clock signal output terminal Not used (open)
16	KBDOUT	O	Serial data output terminal Not used (open)
17	KBDIN	I	Serial data input terminal Not used (open)
18	FLDATA	O	Serial data output to the FL driver (IC701) and LED driver (IC702)
19	FLCLK	O	Serial data transfer clock signal output to the FL driver (IC701) and LED driver (IC702)
20	LEDLT	O	Serial data latch pulse output to the LED driver (IC702) "L" active
21	TBLL	O	Table motor drive signal (counterclockwise) output to the CXA1291P (IC503) "H" active
22	TBLR	O	Table motor drive signal (clockwise) output to the CXA1291P (IC503) "H" active
23	DRIN	O	Door motor drive signal (door close) output to the CXA1291P (IC503) "H" active
24	DROUT	O	Door motor drive signal (door open) output to the CXA1291P (IC503) "H" active
25	ADJ	I	Setting terminal for the test mode "L": ADJ mode, Normally: fixed at "H"
26	LDIN	O	Loading motor drive signal (load-in direction) output to the CXA1291P (IC503) "H" active
27	LDOUT	O	Loading motor drive signal (load-out direction) output to the CXA1291P (IC503) "H" active
28	BUSOUT	O	Sircs remote control signal output for the S-LINK CONTROL A1 "H" active
29	SMUTE	O	Muting on/off control signal output terminal "H" active Not used (pull up)
30	$\overline{RESET}$	I	System reset signal input from the reset signal generator (IC505) "L": reset For several hundreds msec. after the power supply rises, "L" is input, then it changes to "H"
31	EXTAL	I	Main system clock input terminal (10 MHz)
32	XTAL	O	Main system clock output terminal (10 MHz)
33	VSS	—	Ground terminal
34	TX	O	Sub system clock output terminal Not used (open)
35	TEX	I	Sub system clock input terminal Not used (fixed at "L")
36	AVSS	—	Ground terminal (for A/D converter)
37	AVREF	I	Reference voltage (+5V) input terminal (for A/D converter)
38	D.SENS	I	Inputs the disc sensor (Q801) detection signal (A/D input)
39	DOORSW	I	Door open/close detect switch (S810) input (A/D input) "L": open
40	CD1/2/3	I	COMMAND MODE switch (S901) input terminal (A/D input) "L": CD1, "H": CD3 (CD2: center voltage input)
41	SW	I	Destination setting terminal (A/D input) Fixed at "L" in this set
42	KEY3	I	Key input terminal (A/D input) ■, ❚❚, ▷, CLEAR, CHECK, ▷▷⏭ AMS, ⏮◁◁ AMS, PUSH ENTER keys input and rotary encoder jog dial pulse input (S611 to 617 and RE601)
43	KEY2	I	Key input terminal (A/D input) ⏏ OPEN/CLOSE, INPUT, MEMO SEARCH keys input and rotary encoder jog dial pulse input (S621 to 623 and RE601)
44	KEY1	I	Key input terminal (A/D input) I/⏻, TIME/TEXT, GROUP FILE, GROUP 8/7/6/5 keys input (S731 to 737)
45	KEY0	I	Key input terminal (A/D input) REPEAT, PROGRAM, SHUFFLE, CONTINUE, GROUP 4/3/2/1 keys input (S721 to 728)
46	BUSIN	I	Sircs remote control signal input for the S-LINK CONTROL A1 "L" active
47	AMUTE	O	Muting on/off control signal output to the CXD2587Q (IC101) "H": muting on

Pin No.	Pin Name	I/O	Function
48	CLK	O	Command serial data transfer clock signal output to the CXD2587Q (IC101)
49	XLT	O	Command latch pulse output to the CXD2587Q (IC101) "L" active
50	DATA	O	Command serial data output to the CXD2587Q (IC101)
51	SQCLK	O	SENS serial data reading clock and subcode Q data reading clock signal output to the CXD2587Q (IC101)
52	SUBQ	I	Subcode Q data input from the CXD2587Q (IC101)
53	NC	O	Not used (open)
54	SENS	I	Internal status monitor input from the CXD2587Q (IC101) "H" active
55	OUTSW	I	Inputs the loading in/out detect switch (S801) detection signal "L" active
56	RMIN	I	Remote control signal input from the remote control receiver (IC601) "L" active
57	AFADJ	I	Setting terminal for the test mode "L": AFADJ mode, Normally: fixed at "H"
58	FLLT	O	Serial data latch pulse output to the FL driver (IC701) "L" active
59	NC	O	Not used (open)
60	KBCIN	O	Serial data transfer clock signal output terminal Not used (open)
61	SCOR	I	Subcode sync (S0+S1) detection signal input from the CXD2587Q (IC101) "H" active
62	T.SENS1	I	Disc table flag detect sensor (IC802) input terminal
63	T.SENS2	I	Disc table flag detect sensor (IC803) input terminal
64	T.SENS3	I	Disc table home position detect sensor (IC801) input terminal
65	ICSW	O	Enable signal output to the LA5616 (IC506) Used for the BD section reset "H" active
66	RFSW	O	RF AGC hold control signal output to the CXA2568M (IC103) "H" active
67	INSW	I	Inputs the loading in/out detect switch (S801) detection signal "L" active
68 to 71	D3 to D6	I/O	Two-way data bus with the static RAM (IC502)
72	VDD	—	Power supply terminal (+5V)
73	NC (VDD)	—	Not used (connected to power supply (+5V) line)
74	D7	I/O	Two-way data bus with the static RAM (IC502)
75 to 77	D2 to D0	I/O	Two-way data bus with the static RAM (IC502)
78 to 80	A0 to A2	O	Address signal output to the static RAM (IC502)

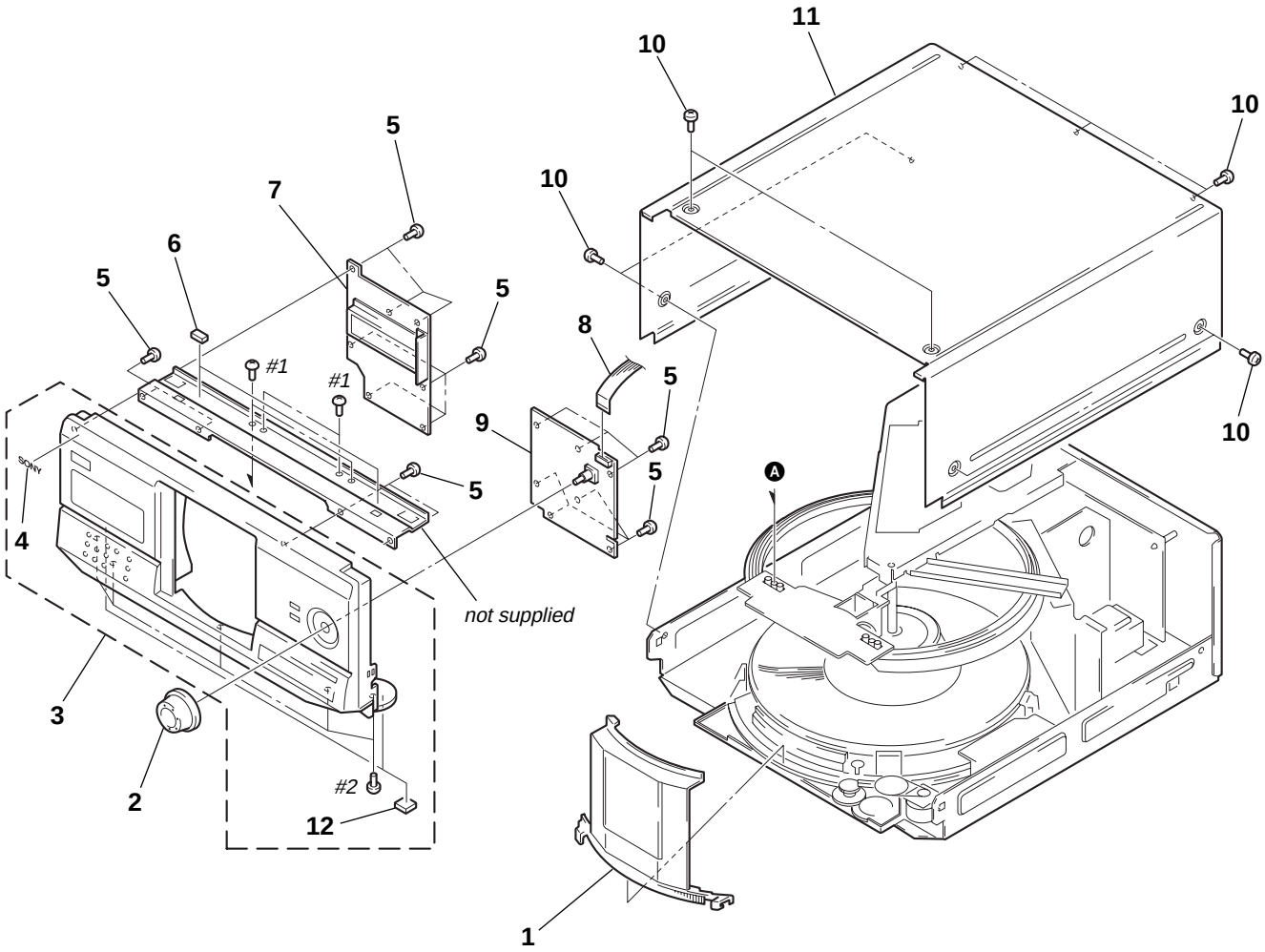
SECTION 8
EXPLODED VIEWS

NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of the electrical parts list.
- Abbreviation
  AED : North European
  AUS : Australian
  CND : Canadian
  SP : Singapore

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

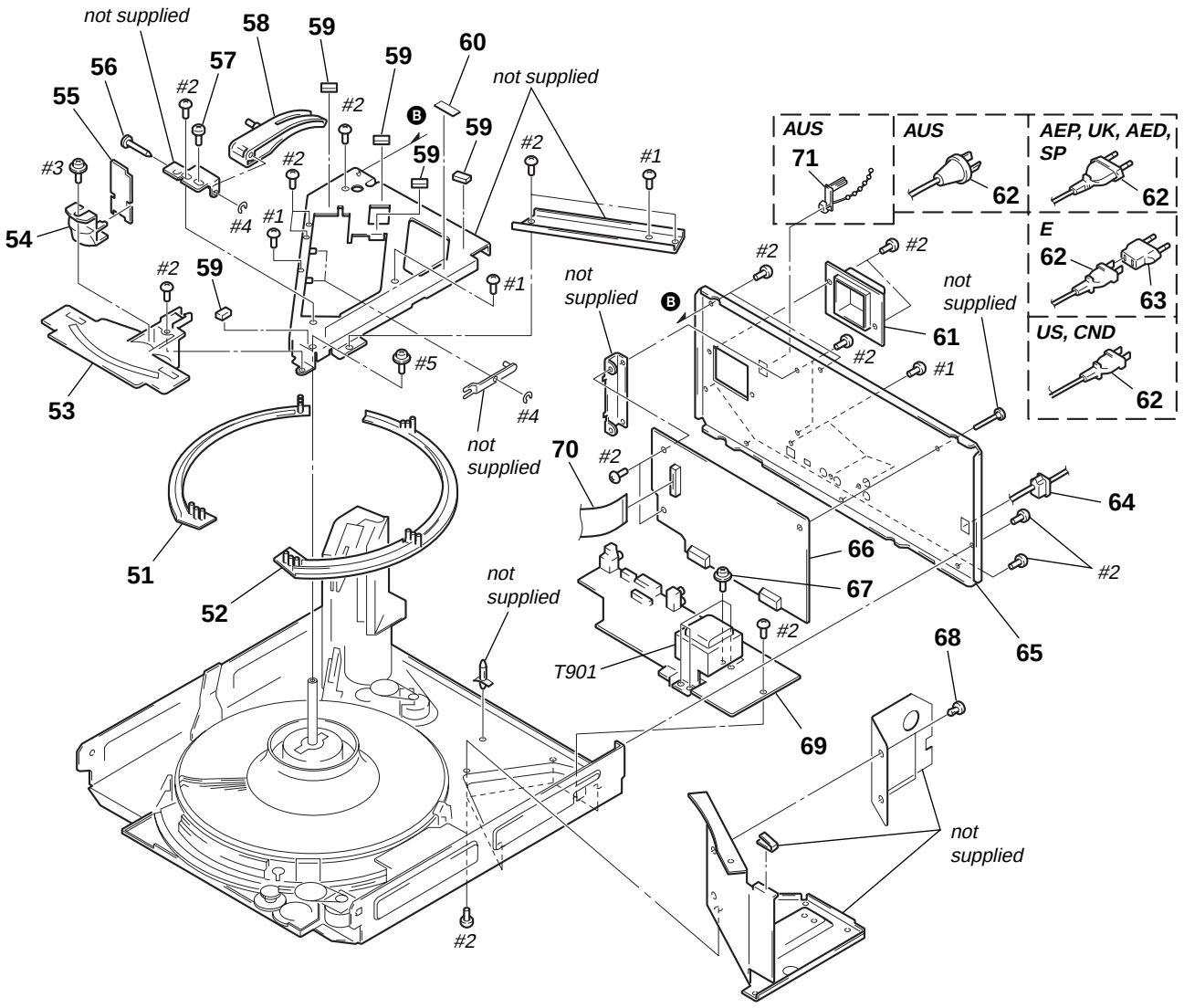
Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

(1) CASE, FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
1	X-4949-616-1	DOOR (CD) ASSY	
2	4-998-523-01	KNOB (JOG)	
3	X-4949-618-1	PANEL ASSY, FRONT (US, CND)	
3	X-4949-619-1	PANEL ASSY, FRONT (EXCEPT US, CND)	
4	4-996-698-01	EMBLEM, SONY	
5	4-951-620-01	SCREW (2.6X8), +BVTP	
6	4-985-553-21	CUSHION	
* 7	A-4724-027-A	DISP BOARD, COMPLETE (US, CND)	
* 7	A-4724-033-A	DISP BOARD, COMPLETE (EXCEPT US, CND)	
8	1-783-364-11	WIRE (FLAT TYPE) (15 CORE)	
* 9	1-669-161-11	JOG BOARD	
10	3-363-099-01	SCREW (CASE 3 TP2)	
* 11	4-982-946-11	CASE	
12	4-977-358-11	CUSHION (FOOT)	

(2) GUIDE ASSY, REAR PANEL SECTION

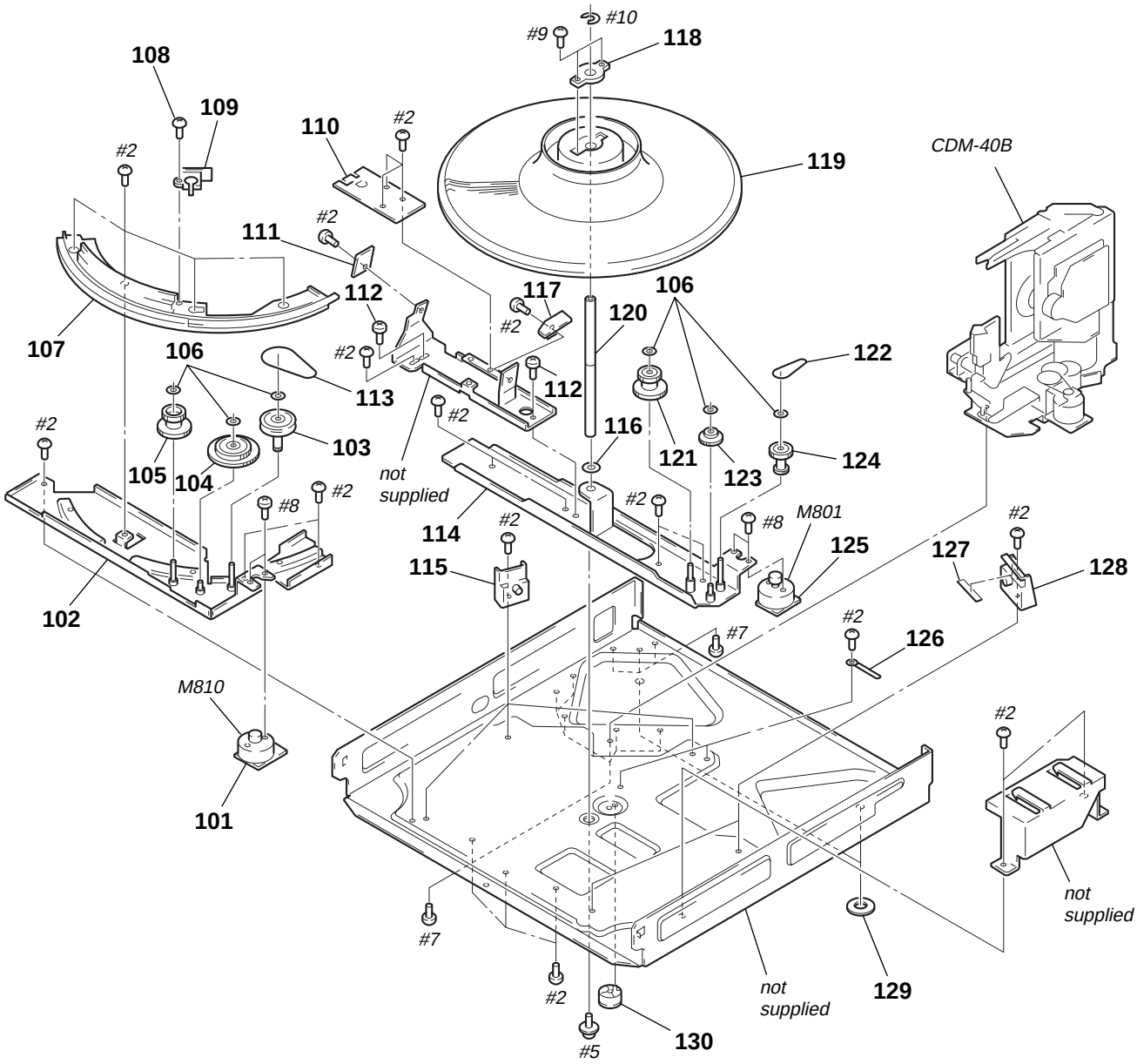


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
* 51	4-982-802-01	RING (A)	
* 52	4-982-803-01	RING (B)	
53	4-998-506-01	GUIDE (DOOR. T)	
54	4-999-182-01	ILLUMINATOR	
* 55	1-669-166-11	ILLUMINATION BOARD	
56	4-982-870-01	SHAFT (GUIDE FULCRUM)	
57	3-356-601-11	SCREW, STEP	
58	4-982-862-01	GUIDE (DISC T)	
59	4-985-553-11	CUSHION	
* 60	3-378-434-01	CUSHION, SARANET	
* 61	4-982-807-01	COVER (FFC)	
⚠62	1-575-042-21	CORD, POWER (US, CND)	
⚠62	1-575-651-21	CORD, POWER (AEP, UK, AED, SP)	
⚠62	1-696-027-11	CORD, POWER (E)	
⚠62	1-696-845-11	CORD, POWER (AUS)	
⚠63	1-569-007-11	ADAPTOR, CONVERSION 2P (E)	
* 64	3-703-244-00	BUSHING (2104), CORD (EXCEPT E)	
64	3-703-571-11	BUSHING (S) (4516), CORD (E)	

Ref. No.	Part No.	Description	Remark
* 65	4-998-525-01	PANEL, BACK (US)	
* 65	4-998-525-11	PANEL, BACK (CND)	
* 65	4-998-525-21	PANEL, BACK (AEP, UK, AED)	
* 65	4-998-525-41	PANEL, BACK (SP)	
* 65	4-998-525-51	PANEL, BACK (E)	
* 65	4-998-525-61	PANEL, BACK (AUS)	
* 66	A-4724-022-A	MAIN BOARD, COMPLETE (US, CND)	
* 66	A-4724-031-A	MAIN BOARD, COMPLETE (EXCEPT US, CND)	
67	4-886-821-11	SCREW, S TIGHT, +PTTWH 3X6	
68	4-053-543-01	RIVET, NYLON	
* 69	1-669-164-11	JACK BOARD	
70	1-773-183-11	WIRE (FLAT TYPE) (23 CORE)	
71	4-956-370-12	BAND, PLUG FIXED (AUS)	
⚠T901	1-431-759-11	TRANSFORMER, POWER (US, CND)	
⚠T901	1-431-760-11	TRANSFORMER, POWER (AEP, UK, AED, SP, AUS)	
⚠T901	1-431-761-11	TRANSFORMER, POWER (E)	

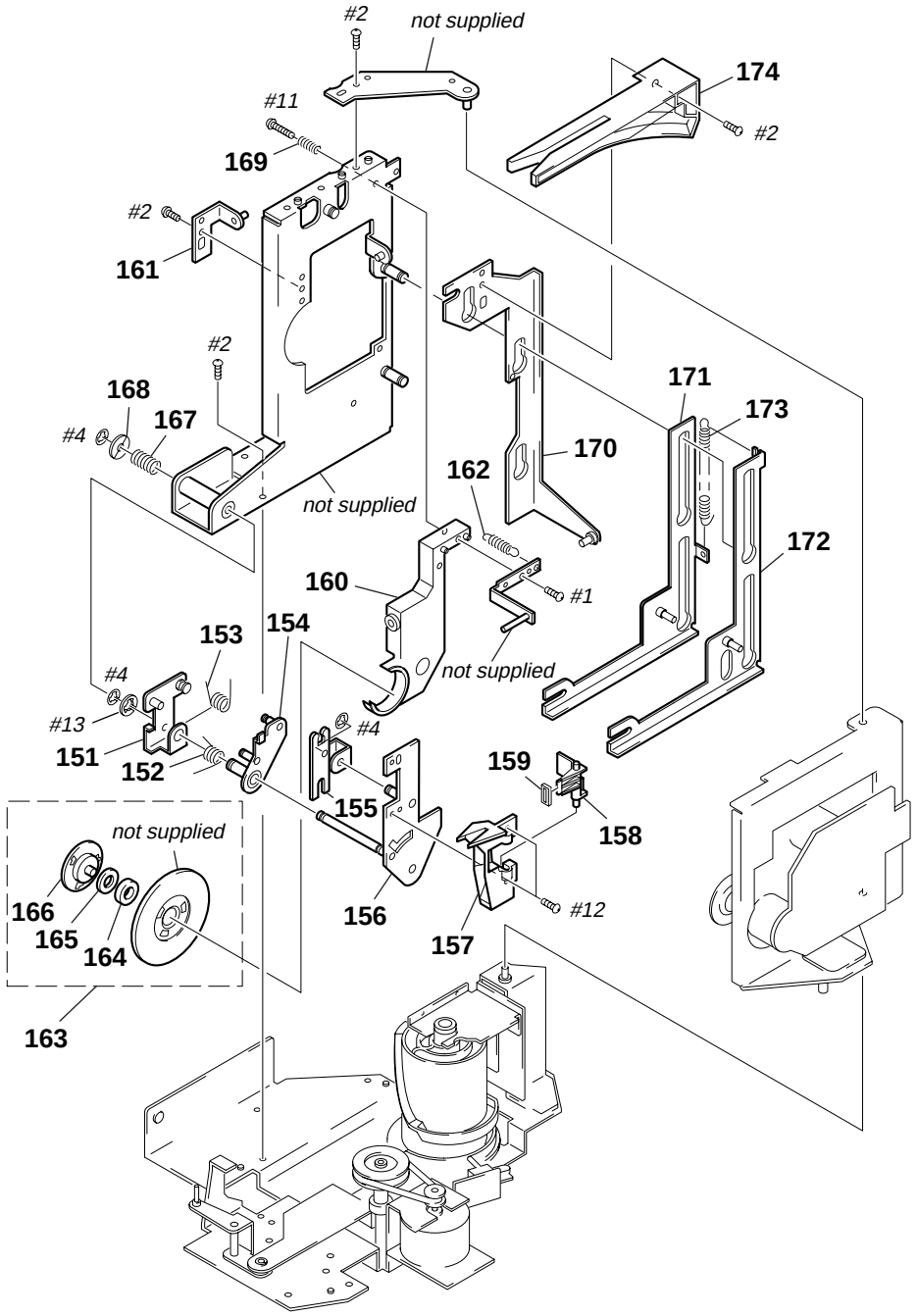
(3) CHASSIS SECTION



Ref. No.	Part No.	Description	Remark
* 101	1-669-167-11	DOOR MOTOR BOARD	
* 102	X-4949-615-1	BRACKET (GEAR) ASSY	
103	4-998-510-01	GEAR (PULLEY)	
104	4-998-509-01	GEAR (CENTER)	
105	4-998-508-01	GEAR (DOOR)	
106	3-325-697-21	WASHER	
107	4-998-507-01	GUIDE (DOOR.B)	
108	4-951-620-01	SCREW (2.6X8), +BVTP	
* 109	1-669-168-11	DOOR SW BOARD	
* 110	1-661-470-11	T. SENS BOARD	
* 111	1-661-468-11	D. SENS (LUMINOUS) BOARD	
112	3-356-601-11	SCREW, STEP	
113	4-210-030-01	BELT (42X1)	
114	X-4947-230-2	BRACKET (TABLE) ASSY	
115	X-4947-606-1	HOLDER (ROLLER 2) ASSY	
116	3-701-446-21	WASHER, 8	

Ref. No.	Part No.	Description	Remark
* 117	1-661-469-11	D. SENS (RAY CATCHER) BOARD	
118	4-976-471-01	BEARING (TABLE)	
119	X-4947-231-1	TABLE (200) ASSY	
120	4-982-892-01	SHAFT (CENTER)	
121	4-982-891-01	GEAR (TABLE)	
122	4-962-822-01	BELT (TIMING)	
123	4-982-893-01	GEAR (CENTER 2)	
124	X-4947-607-1	GEAR (PULLEY) ASSY	
* 125	1-661-466-11	T. MOTOR BOARD	
126	3-703-397-01	STOPPER, WIRING	
127	4-985-574-01	SPACER (ROLLER)	
128	X-4947-229-1	HOLDER (ROLLER) ASSY	
129	4-983-279-01	CUSHION (RF)	
130	4-931-169-01	FOOT	
M801	A-4604-847-A	MOTOR ASSY (TABLE)	
M810	X-4950-062-1	DOOR MOTOR ASSY	

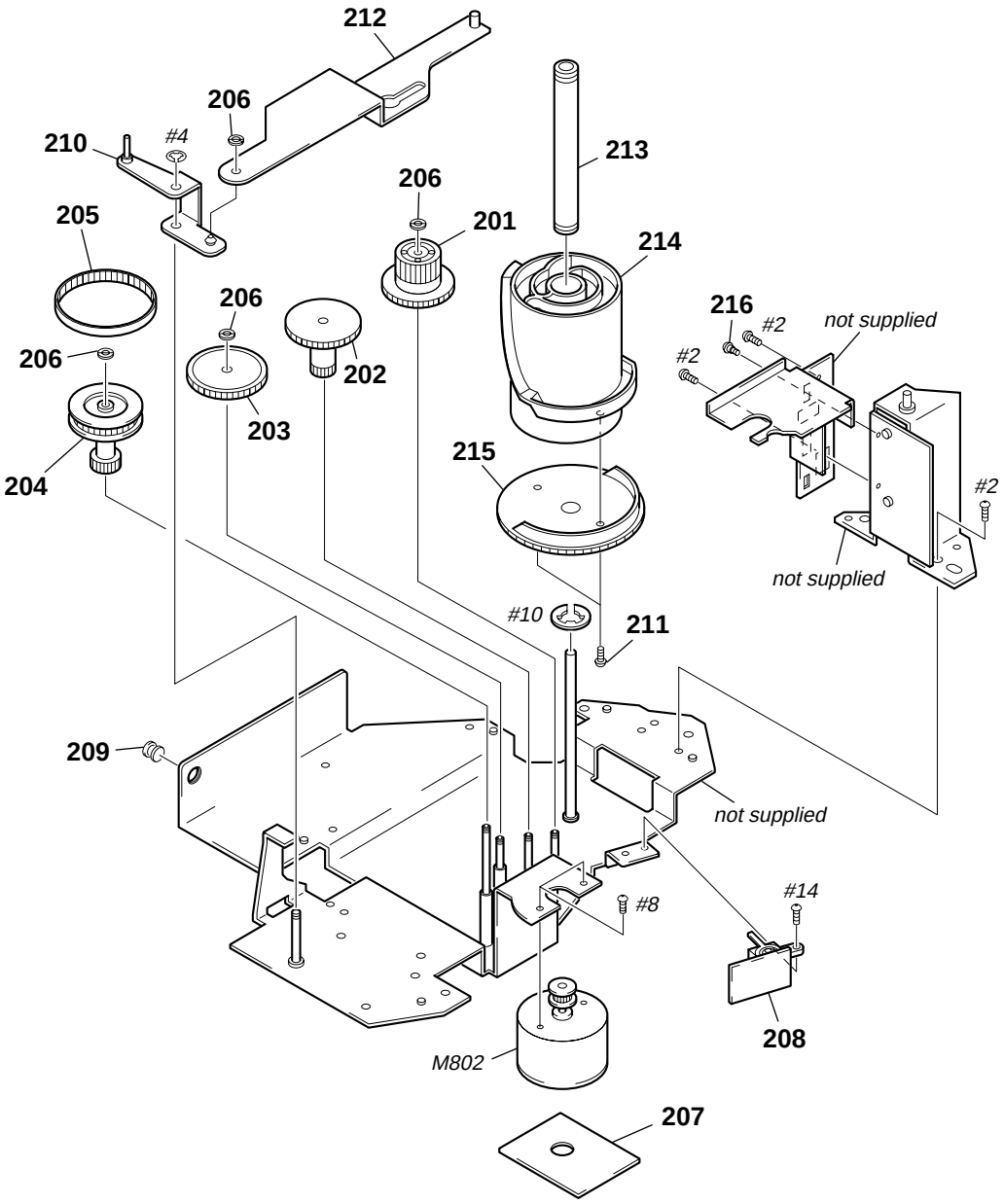
(4) MECHANISM DECK SECTION-1 (CDM-40B)



Ref. No.	Part No.	Description	Remark
151	X-4947-241-1	LEVER (C) ASSY	
152	4-982-882-01	SPRING (LIMITTER), TORSION	
153	4-982-881-01	SPRING (HOLDER), TORSION	
154	X-4947-239-1	LIMITTER (A) ASSY	
155	4-982-853-01	LEVER (B)	
156	X-4947-240-1	LEVER (A) ASSY	
157	4-988-143-01	HOLDER (DISC A2)	
158	4-982-855-01	HOLDER (DISC B)	
159	4-982-856-01	PAD	
160	4-976-458-01	HOLDER (MAGNET)	
161	X-4946-326-1	HOLDER (CLAMP) ASSY	
162	4-983-777-01	SPRING (MG), TENSION	

Ref. No.	Part No.	Description	Remark
163	A-4672-092-A	MAGNET ASSY	
164	3-366-559-02	MAGNET (CHUCK)	
165	4-960-633-01	YOKE (MAGNET)	
166	4-960-632-11	PULLEY (B)	
167	4-983-319-01	SPRING (THRUST), COMPRESSION	
* 168	4-976-456-01	WASHER (STOPPER)	
169	3-938-588-01	SPRING, COMPRESSION	
170	X-4947-242-1	SLIDER (C) ASSY	
171	X-4947-238-1	SLIDER (B) ASSY	
172	X-4947-237-1	SLIDER (A) ASSY	
173	4-982-880-01	SPRING (SLIDER A), TENSION	
* 174	4-982-863-01	GUIDE (DISC P)	

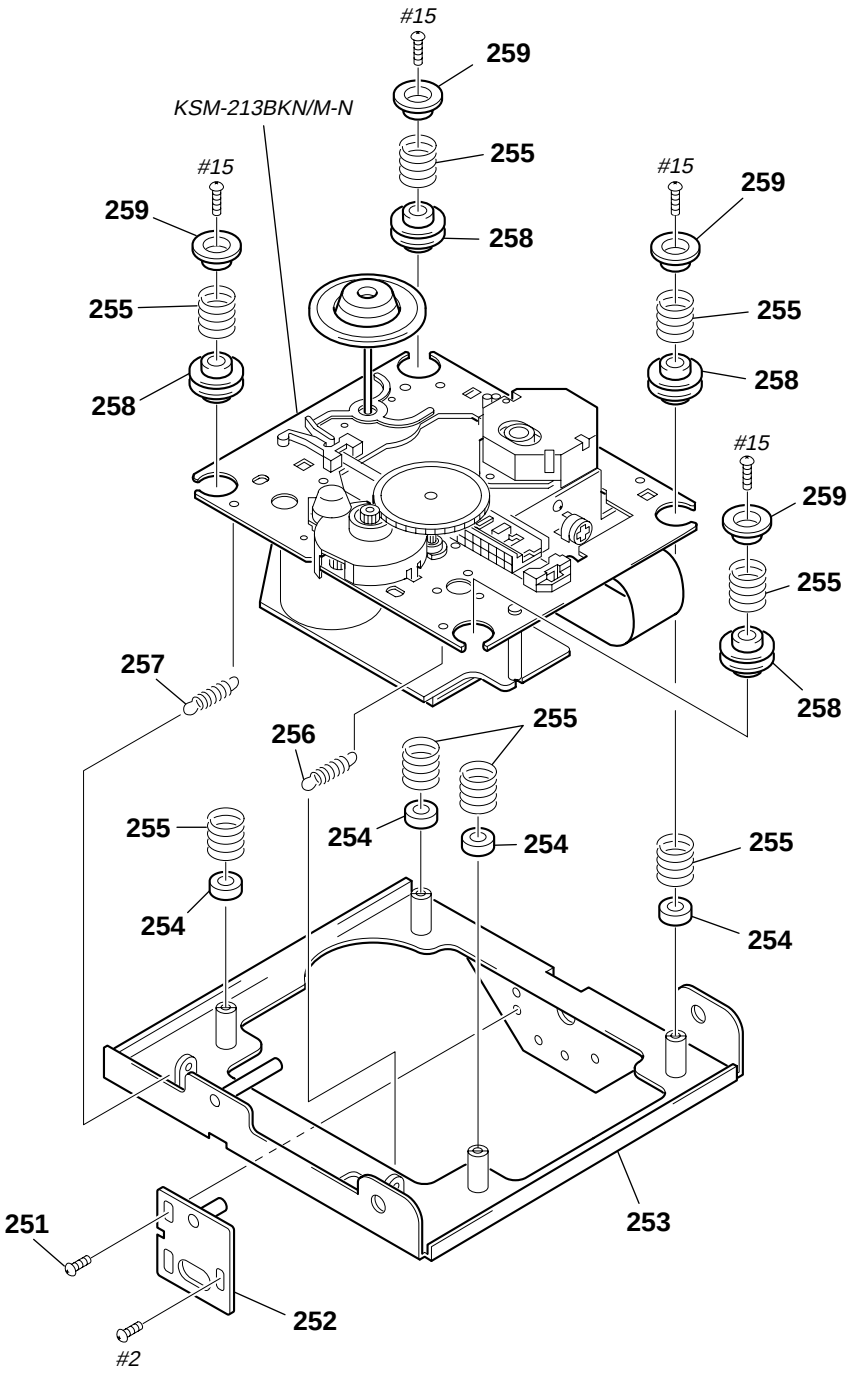
(5) MECHANISM DECK SECTION-2 (CDM-40B)



Ref. No.	Part No.	Description	Remark
201	4-976-465-01	GEAR (LOADING 1)	
202	4-976-466-01	GEAR (LOADING 2)	
203	4-982-893-01	GEAR (CENTER 2)	
204	X-4947-607-1	GEAR (PULLEY) ASSY	
205	4-982-867-01	BELT (TIMING)	
206	3-325-697-21	WASHER	
* 207	1-661-465-11	L. MOTOR BOARD	
* 208	1-661-467-11	L. SW BOARD	
209	3-489-073-00	SCREW, THRUST	

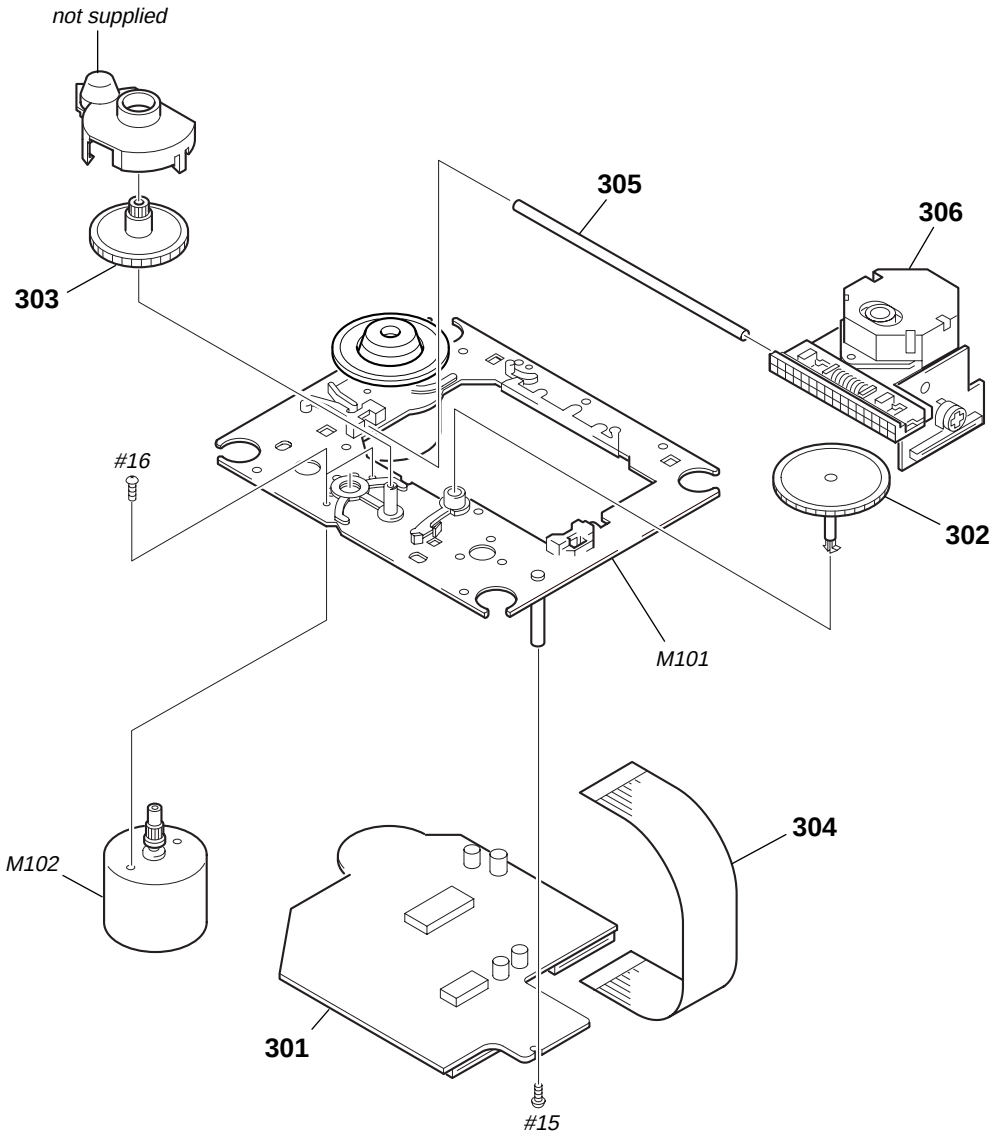
Ref. No.	Part No.	Description	Remark
210	X-4947-227-1	LEVER (STOPPER) ASSY	
211	4-951-291-01	SCREW	
212	X-4947-234-1	SLIDER (LOCK) ASSY	
213	4-982-857-01	BEARING (CAM)	
214	4-982-860-01	CAM (A)	
215	4-982-861-01	CAM (B)	
216	3-356-601-11	SCREW, STEP	
M802	A-4604-847-A	MOTOR ASSY (LOADING)	

(6) MECHANISM DECK SECTION-3 (CDM-40B)



Ref. No.	Part No.	Description	Remark
251	3-356-601-11	SCREW, STEP	
252	X-4947-244-1	SLIDER (BU ADJUSTMENT) ASSY	
253	X-4947-243-1	HOLDER (BU) ASSY	
254	4-982-859-01	HOLDER (DAMPER)	
255	4-982-878-01	SPRING (F), COMPRESSION	
256	4-982-872-01	SPRING (F-2), TENSION	
257	4-982-871-01	SPRING (F-1), TENSION	
258	4-982-858-01	DAMPER	
259	4-960-617-01	CAP (F)	

(7) OPTICAL PICK-UP SECTION (KSM-213BKN/M-N)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
* 301	A-4724-029-A	BD BOARD, COMPLETE	
302	2-626-907-01	GEAR (A)	
303	2-627-003-02	GEAR (B) (RP)	
304	1-769-069-11	WIRE (FLAT TYPE) (16 CORE)	
305	2-626-908-01	SHAFT, SLED	
⚠306	8-848-379-31	OPTICAL PICK-UP KSM-213BKN/M-N	
M101	X-2626-234-1	T. T CHASSIS ASSY (MG) (K) (SPINDLE)	
M102	X-2625-769-1	MOTOR GEAR ASSY (MB) (PP) (SLED)	

BD

SECTION 9
ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH
- Abbreviation
  AED : North European
  AUS : Australian
  CND : Canadian
  SP : Singapore

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	A-4724-029-A	BD BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C102	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C103	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C104	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C106	1-164-346-11	CERAMIC CHIP	1uF		16V
C107	1-164-346-11	CERAMIC CHIP	1uF		16V
C108	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C109	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C110	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C111	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C112	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C113	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C114	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C115	1-126-607-11	ELECT CHIP	47uF	20%	4V
C116	1-126-607-11	ELECT CHIP	47uF	20%	4V
C117	1-126-209-11	ELECT CHIP	100uF	20%	4V
C118	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C119	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C120	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C121	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C122	1-135-155-21	TANTALUM CHIP	4.7uF	10%	16V
C123	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C124	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C125	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C126	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C127	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C130	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C131	1-135-216-11	TANTALUM CHIP	10uF	20%	10V
C140	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C141	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C151	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C153	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C154	1-164-336-11	CERAMIC CHIP	0.33uF		25V
C156	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C157	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C159	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C161	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C162	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C163	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C164	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C165	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C166	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C167	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C168	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C171	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C172	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C181	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C182	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
		< CONNECTOR >			
CN101	1-770-072-11	CONNECTOR, (LIF (NON-ZIF)) FFC23P			
CN102	1-777-937-11	CONNECTOR, FFC/FPC 16P			
		< IC >			
IC101	8-752-386-85	IC CXD2587Q			
IC102	8-759-455-91	IC BA6392FP-E2			
IC103	8-752-085-51	IC CXA2568M-T6			
		< COIL >			
L101	1-414-234-11	INDUCTOR CHIP 0uH			
L102	1-414-234-11	INDUCTOR CHIP 0uH			
		< TRANSISTOR >			
Q101	8-729-010-08	TRANSISTOR MSB710-R			
		< RESISTOR >			
R101	1-216-077-00	METAL CHIP	15K	5%	1/10W
R102	1-216-097-00	RES, CHIP	100K	5%	1/10W
R103	1-216-077-00	METAL CHIP	15K	5%	1/10W
R104	1-216-085-00	METAL CHIP	33K	5%	1/10W
R105	1-216-097-00	RES, CHIP	100K	5%	1/10W
R106	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R107	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R108	1-216-073-00	METAL CHIP	10K	5%	1/10W
R109	1-216-121-00	RES, CHIP	1M	5%	1/10W
R110	1-216-025-00	RES, CHIP	100	5%	1/10W
R111	1-216-121-00	RES, CHIP	1M	5%	1/10W
R113	1-216-121-00	RES, CHIP	1M	5%	1/10W
R116	1-216-025-00	RES, CHIP	100	5%	1/10W

Ref. No.	Part No.	Description			Remark
R117	1-216-049-11	RES, CHIP	1K	5%	1/10W
R119	1-216-043-00	RES, CHIP	560	5%	1/10W
R123	1-216-073-00	METAL CHIP	10K	5%	1/10W
R124	1-216-097-00	RES, CHIP	100K	5%	1/10W
R131	1-216-037-00	METAL CHIP	330	5%	1/10W
R135	1-216-295-00	SHORT	0		
R136	1-216-295-00	SHORT	0		
R137	1-216-295-00	SHORT	0		
R138	1-216-295-00	SHORT	0		
R143	1-216-103-00	METAL CHIP	180K	5%	1/10W
R144	1-216-103-00	METAL CHIP	180K	5%	1/10W
R147	1-216-081-00	METAL CHIP	22K	5%	1/10W
R148	1-216-001-00	METAL CHIP	10	5%	1/10W
R149	1-216-003-11	RES, CHIP	12	5%	1/10W
R158	1-216-111-00	METAL CHIP	390K	5%	1/10W
R159	1-216-101-00	METAL CHIP	150K	5%	1/10W
R161	1-216-308-00	METAL CHIP	4.7	5%	1/10W
R162	1-216-101-00	METAL CHIP	150K	5%	1/10W
R171	1-216-077-00	METAL CHIP	15K	5%	1/10W
R172	1-216-077-00	METAL CHIP	15K	5%	1/10W
R173	1-216-077-00	METAL CHIP	15K	5%	1/10W
R181	1-216-077-00	METAL CHIP	15K	5%	1/10W
R182	1-216-077-00	METAL CHIP	15K	5%	1/10W
R183	1-216-077-00	METAL CHIP	15K	5%	1/10W
		< SWITCH >			
S101	1-572-085-11	SWITCH, LEAF (LIMIT)			
		< VIBRATOR >			
X101	1-767-408-41	VIBRATOR, CRYSTAL (16.9344MHz)			
**********					
*	1-661-468-11	D.SENS (LUMINOUS) BOARD			
		**********			
*	4-976-473-01	HOLDER (LED-S)			
		< DIODE >			
D801	8-719-055-84	DIODE GL-528VS1			
**********					
*					
	1-661-469-11	D.SENS (RAY CATCHER) BOARD			
		**********			
*	4-985-300-01	HOLDER (P-T)			
		< PHOTO TRANSISTOR >			
Q801	8-729-926-31	PHOTO TRANSISTOR PT483F1S			
**********					
*	A-4724-027-A	DISP BOARD, COMPLETE (US, CND)			
*	A-4724-033-A	DISP BOARD, COMPLETE (EXCEPT US, CND)			
		**********			
*	4-982-811-01	HOLDER (FL)			
		< CAPACITOR >			
C701	1-162-294-31	CERAMIC	0.001uF	10%	50V
C702	1-162-215-31	CERAMIC	47PF	5%	50V
C703	1-162-306-11	CERAMIC	0.01uF	20%	16V
C704	1-164-159-11	CERAMIC	0.1uF		50V
C705	1-124-584-00	ELECT	100uF	20%	10V
C706	1-162-282-31	CERAMIC	100PF	10%	50V
C707	1-162-282-31	CERAMIC	100PF	10%	50V
C708	1-162-282-31	CERAMIC	100PF	10%	50V
C709	1-162-288-31	CERAMIC	330PF	10%	50V
C710	1-124-584-00	ELECT	100uF	20%	10V
C711	1-164-159-11	CERAMIC	0.1uF		50V
C712	1-164-159-11	CERAMIC	0.1uF		50V
		< LEAD PIN >			
* CLP701	1-690-880-31	LEAD (WITH CONNECTOR)			
		< LED >			
D701	8-719-046-39	LED SEL5821A-TH15 (GROUP 1)			
D702	8-719-046-39	LED SEL5821A-TH15 (GROUP 2)			
D703	8-719-046-39	LED SEL5821A-TH15 (GROUP 3)			
D704	8-719-046-39	LED SEL5821A-TH15 (GROUP 4)			
D705	8-719-046-39	LED SEL5821A-TH15 (GROUP 5)			
D706	8-719-046-39	LED SEL5821A-TH15 (GROUP 6)			
D707	8-719-046-39	LED SEL5821A-TH15 (GROUP 7)			
D708	8-719-046-39	LED SEL5821A-TH15 (GROUP 8)			
D709	8-719-046-44	LED SEL5221S (STANDBY)			
		< FLUORESCENT INDICATOR TUBE >			
FL701	1-517-756-11	INDICATOR TUBE, FLUORESCENT			
		< IC >			
IC601	8-749-014-66	IC NJL56H400			
IC701	8-759-498-92	IC MSM9202-03GS-K			
IC702	8-759-183-47	IC M66310FP			
		< TRANSISTOR >			
Q701	8-729-900-80	TRANSISTOR DTC114ES			
		< RESISTOR >			
R701	1-249-441-11	CARBON	100K	5%	1/4W
R702	1-247-807-31	CARBON	100	5%	1/4W
R703	1-247-807-31	CARBON	100	5%	1/4W
R704	1-247-807-31	CARBON	100	5%	1/4W
R705	1-247-807-31	CARBON	100	5%	1/4W
R706	1-247-843-11	CARBON	3.3K	5%	1/4W
R707	1-247-807-31	CARBON	100	5%	1/4W
R708	1-247-807-31	CARBON	100	5%	1/4W
R709	1-247-807-31	CARBON	100	5%	1/4W
R711	1-249-411-11	CARBON	330	5%	1/4W
R712	1-249-411-11	CARBON	330	5%	1/4W
R713	1-249-413-11	CARBON	470	5%	1/4W
R722	1-249-415-11	CARBON	680	5%	1/4W
R723	1-249-417-11	CARBON	1K	5%	1/4W
R724	1-249-419-11	CARBON	1.5K	5%	1/4W
R725	1-249-421-11	CARBON	2.2K	5%	1/4W
R726	1-247-843-11	CARBON	3.3K	5%	1/4W
R727	1-249-427-11	CARBON	6.8K	5%	1/4W
R728	1-249-431-11	CARBON	15K	5%	1/4W
R732	1-249-415-11	CARBON	680	5%	1/4W

DISP | DOOR MOTOR | DOOR SW | ILLUMINATION | JACK

Ref. No.	Part No.	Description			Remark
R733	1-249-417-11	CARBON	1K	5%	1/4W
R734	1-249-419-11	CARBON	1.5K	5%	1/4W
R735	1-249-421-11	CARBON	2.2K	5%	1/4W
R736	1-247-843-11	CARBON	3.3K	5%	1/4W
R737	1-249-427-11	CARBON	6.8K	5%	1/4W
R751	1-249-429-11	CARBON	10K	5%	1/4W
		< SWITCH >			
S721	1-572-184-11	SWITCH, KEYBOARD (REPEAT)			
S722	1-572-184-11	SWITCH, KEYBOARD (PROGRAM)			
S723	1-572-184-11	SWITCH, KEYBOARD (SHUFFLE)			
S724	1-572-184-11	SWITCH, KEYBOARD (CONTINUE)			
S725	1-572-184-11	SWITCH, KEYBOARD (GROUP 4)			
S726	1-572-184-11	SWITCH, KEYBOARD (GROUP 3)			
S727	1-572-184-11	SWITCH, KEYBOARD (GROUP 2)			
S728	1-572-184-11	SWITCH, KEYBOARD (GROUP 1)			
S731	1-572-184-11	SWITCH, KEYBOARD (I/⏻)			
S732	1-572-184-11	SWITCH, KEYBOARD (TIME/TEXT)			
S733	1-572-184-11	SWITCH, KEYBOARD (GROUP FILE)			
S734	1-572-184-11	SWITCH, KEYBOARD (GROUP 8)			
S735	1-572-184-11	SWITCH, KEYBOARD (GROUP 7)			
S736	1-572-184-11	SWITCH, KEYBOARD (GROUP 6)			
S737	1-572-184-11	SWITCH, KEYBOARD (GROUP 5)			
**********					
*	1-669-167-11	DOOR MOTOR BOARD			
		**********			
		< CONNECTOR >			
* CN812	1-568-951-11	PIN, CONNECTOR 2P			
**********					
*	1-669-168-11	DOOR SW BOARD			
		**********			
		< RESISTOR >			
R807	1-249-429-11	CARBON	10K	5%	1/4W
		< SWITCH >			
S810	1-571-300-21	SWITCH, ROTARY (DOOR SW)			
**********					
*	1-669-166-11	ILLUMINATION BOARD			
		**********			
		< CONNECTOR >			
CN813	1-506-481-11	PIN, CONNECTOR 2P			
		< LED >			
D802	8-719-059-65	LED HLMF-KL05 (INSIDE ILLUMINATION)			
D803	8-719-059-65	LED HLMF-KL05 (INSIDE ILLUMINATION)			
D804	8-719-059-65	LED HLMF-KL05 (INSIDE ILLUMINATION)			
		< RESISTOR >			
R805	1-249-407-11	CARBON	150	5%	1/4W
R806	1-249-401-11	CARBON	47	5%	1/4W
**********					

Ref. No.	Part No.	Description			Remark
*	1-669-164-11	JACK BOARD			
		**********			
*	4-962-200-11	PLATE (TR), GROUND			
		< CAPACITOR >			
C351	1-162-290-31	CERAMIC	470PF	10%	50V
C451	1-162-290-31	CERAMIC	470PF	10%	50V
C901	1-161-494-00	CERAMIC	0.022uF		25V
C904	1-164-159-11	CERAMIC	0.1uF		50V
C907	1-164-159-11	CERAMIC	0.1uF		50V
C911	1-161-494-00	CERAMIC	0.022uF		25V
C912	1-126-052-11	ELECT	100uF	20%	10V
		< CONNECTOR >			
CN902	1-569-497-11	SOCKET, CONNECTOR 11P			
* CN903	1-569-496-11	SOCKET, CONNECTOR 10P			
* CN904	1-568-951-11	PIN, CONNECTOR 2P			
CN906	1-580-230-11	PIN, CONNECTOR (PC BOARD) 2P			
		< DIODE >			
D901	8-719-911-19	DIODE 1SS119			
		< IC >			
IC901	8-749-921-12	IC GP1F32T (DIGITAL OUT OPTICAL)			
		< JACK >			
* J901	1-764-188-11	JACK (SMALL TYPE) (DIA. 3.5) (S-LINK CONTROL A1)			
* J902	1-764-188-11	JACK (SMALL TYPE) (DIA. 3.5) (S-LINK CONTROL A1)			
J904	1-770-719-11	JACK, PIN 2P (LINE OUT)			
		< LINE FILTER >			
⚠L901	1-421-915-11	FILTER, LINE (EXCEPT E)			
		< COIL >			
L902	1-410-503-11	INDUCTOR 3.3uH			
		< TRANSISTOR >			
Q901	8-729-620-05	TRANSISTOR 2SC2603-EF			
		< RESISTOR >			
R351	1-215-405-00	METAL	220	1%	1/4W
R451	1-215-405-00	METAL	220	1%	1/4W
R901	1-249-393-11	CARBON	10	5%	1/4W
R902	1-249-425-11	CARBON	4.7K	5%	1/4W
R903	1-249-429-11	CARBON	10K	5%	1/4W
R921	1-249-429-11	CARBON	10K	5%	1/4W
		< SWITCH >			
S901	1-762-910-11	SWITCH, SLIDE (COMMAND MODE)			
⚠S902	1-572-675-11	SWITCH, POWER VOLTAGE CHANGE (VOLTAGE SELECTOR) (E)			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

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Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
		< TRANSFORMER >			
⚠T901	1-431-759-11	TRANSFORMER, POWER (US, CND)			
⚠T901	1-431-760-11	TRANSFORMER, POWER (AEP, AED, UK, SP, AUS)			
⚠T901	1-431-761-11	TRANSFORMER, POWER (E)			
**********					
*	1-669-161-11	JOG BOARD **********			
		< CONNECTOR >			
* CN601	1-569-306-11	SOCKET, CONNECTOR (L TYRE) 15P			
		< LED >			
D601	8-719-046-40	LED SEL5521C-TH8F (▷)			
D602	8-719-046-38	LED SEL5821A-TH8F (▮▮)			
		< RESISTOR >			
R601	1-249-407-11	CARBON	150	5%	1/4W
R602	1-249-409-11	CARBON	220	5%	1/4W
R612	1-249-415-11	CARBON	680	5%	1/4W
R613	1-249-417-11	CARBON	1K	5%	1/4W
R614	1-249-419-11	CARBON	1.5K	5%	1/4W
R615	1-249-421-11	CARBON	2.2K	5%	1/4W
R616	1-247-843-11	CARBON	3.3K	5%	1/4W
R617	1-249-427-11	CARBON	6.8K	5%	1/4W
R618	1-249-431-11	CARBON	15K	5%	1/4W
R619	1-249-437-11	CARBON	47K	5%	1/4W
R622	1-249-415-11	CARBON	680	5%	1/4W
R623	1-249-417-11	CARBON	1K	5%	1/4W
R624	1-249-419-11	CARBON	1.5K	5%	1/4W
R651	1-249-429-11	CARBON	10K	5%	1/4W
R652	1-249-429-11	CARBON	10K	5%	1/4W
		< ROTARY ENCODER >			
RE601	1-475-543-11	ENCODER, ROTARY (DISC/CHARACTER PUSH ENTER)			
		< SWITCH >			
S611	1-572-184-11	SWITCH, KEYBOARD (■)			
S612	1-572-184-11	SWITCH, KEYBOARD (▮▮)			
S613	1-572-184-11	SWITCH, KEYBOARD (▷)			
S614	1-572-184-11	SWITCH, KEYBOARD (CLEAR)			
S615	1-572-184-11	SWITCH, KEYBOARD (CHECK)			
S616	1-572-184-11	SWITCH, KEYBOARD (▷▷I, AMS)			
S617	1-572-184-11	SWITCH, KEYBOARD (I◁◁, AMS)			
S621	1-572-184-11	SWITCH, KEYBOARD (⏏, OPEN/CLOSE)			
S622	1-572-184-11	SWITCH, KEYBOARD (INPUT)			
S623	1-572-184-11	SWITCH, KEYBOARD (MEMO SEARCH)			
**********					
*	1-661-465-11	L.MOTOR BOARD **********			
**********					

Ref. No.	Part No.	Description			Remark
*	1-661-467-11	L.SW BOARD **********			
		< SWITCH >			
S801	1-571-300-21	SWITCH, ROTARY (LOADING DET)			
**********					
*	A-4724-022-A	MAIN BOARD, COMPLETE (US, CND)			
*	A-4724-031-A	MAIN BOARD, COMPLETE (EXCEPT US, CND) **********			
	7-685-871-01	SCREW +BVTT 3X6 (S)			
		< CAPACITOR >			
C301	1-126-233-11	ELECT	22uF	20%	50V
C305	1-126-052-11	ELECT	100uF	20%	10V
C327	1-126-163-11	ELECT	4.7uF	20%	50V
C401	1-126-233-11	ELECT	22uF	20%	50V
C405	1-126-052-11	ELECT	100uF	20%	10V
C501	1-128-489-11	ELECT	3300uF	20%	16V
C502	1-124-360-00	ELECT	1000uF	20%	16V (US, CND)
C502	1-126-027-11	ELECT	1000uF	20%	25V (EXCEPT US, CND)
C503	1-124-122-11	ELECT	100uF	20%	50V
C504	1-126-021-11	ELECT	33uF	20%	35V
C505	1-126-052-11	ELECT	100uF	20%	16V
C506	1-126-101-11	ELECT	100uF	20%	16V
C507	1-126-044-11	ELECT	1uF	20%	50V
C508	1-126-101-11	ELECT	100uF	20%	16V
C509	1-124-997-11	ELECT	470uF	20%	10V
C510	1-126-163-11	ELECT	4.7uF	20%	50V
C511	1-126-163-11	ELECT	4.7uF	20%	50V
C512	1-161-494-00	CERAMIC	0.022uF		25V
C513	1-126-052-11	ELECT	100uF	20%	16V
C514	1-126-023-11	ELECT	100uF	20%	25V
C516	1-164-159-11	CERAMIC	0.1uF		50V
C518	1-164-159-11	CERAMIC	0.1uF		50V
C519	1-164-159-11	CERAMIC	0.1uF		50V
C521	1-164-159-11	CERAMIC	0.1uF		50V
C522	1-110-489-11	CAPACITOR	1F		5.5V
C531	1-161-494-00	CERAMIC	0.022uF		25V
C532	1-126-052-11	ELECT	100uF	20%	10V
C533	1-161-494-00	CERAMIC	0.022uF		25V
C551	1-136-165-00	FILM	0.1uF	5%	50V
C552	1-164-159-11	CERAMIC	0.1uF		50V
C561	1-136-165-00	FILM	0.1uF	5%	50V
C562	1-164-159-11	CERAMIC	0.1uF		50V
C571	1-136-165-00	FILM	0.1uF	5%	50V
C572	1-164-159-11	CERAMIC	0.1uF		50V
C610	1-161-494-00	CERAMIC	0.022uF		25V
C620	1-161-494-00	CERAMIC	0.022uF		25V
C720	1-161-494-00	CERAMIC	0.022uF		25V
C730	1-161-494-00	CERAMIC	0.022uF		25V
		< CONNECTOR >			
CN501	1-569-321-11	SOCKET, CONNECTOR 15P			
CN502	1-568-742-11	SOCKET, CONNECTOR 23P			

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MAIN

Ref. No.	Part No.	Description			Remark
* CN503	1-568-951-11	PIN, CONNECTOR 2P			
CN504	1-506-469-11	PIN, CONNECTOR 4P			
CN505	1-506-468-11	PIN, CONNECTOR 3P			
* CN506	1-568-955-11	PIN, CONNECTOR 6P			
* CN507	1-568-951-11	PIN, CONNECTOR 2P			
* CN508	1-569-505-11	PIN, CONNECTOR 10P			
* CN509	1-569-506-11	PIN, CONNECTOR 11P			
		< DIODE >			
D327	8-719-911-19	DIODE 1SS119			
D501	8-719-024-99	DIODE 11ES2-NTA2B			
D502	8-719-024-99	DIODE 11ES2-NTA2B			
D503	8-719-024-99	DIODE 11ES2-NTA2B			
D504	8-719-024-99	DIODE 11ES2-NTA2B			
D505	8-719-024-99	DIODE 11ES2-NTA2B			
D506	8-719-110-72	DIODE RD30ESB2			
D507	8-719-109-93	DIODE RD6.2ESB2			
D508	8-719-109-85	DIODE RD5.1ES-B2			
D509	8-719-911-19	DIODE 1SS119			
D521	8-719-911-19	DIODE 1SS119			
		< IC >			
IC401	8-759-145-58	IC uPC4558C			
IC501	8-752-892-41	IC CXP84340-075Q			
IC502	8-759-463-99	IC M5M5256DFP-70XL			
IC503	8-759-821-32	IC CXA1291P			
IC504	8-759-094-53	IC TA7805S			
IC505	8-759-256-72	IC PST994D			
IC506	8-759-330-29	IC LA5616			
		< COIL >			
L501	1-412-473-21	INDUCTOR 0uH			
L502	1-412-473-21	INDUCTOR 0uH			
		< TRANSISTOR >			
Q322	8-729-141-26	TRANSISTOR 2SC3622A-LK			
Q323	8-729-141-26	TRANSISTOR 2SC3622A-LK			
Q325	8-729-900-65	TRANSISTOR DTA144ES			
Q327	8-729-900-65	TRANSISTOR DTA144ES			
Q422	8-729-141-26	TRANSISTOR 2SC3622A-LK			
Q423	8-729-141-26	TRANSISTOR 2SC3622A-LK			
Q425	8-729-900-65	TRANSISTOR DTA144ES			
Q501	8-729-140-97	TRANSISTOR 2SB734-34			
Q503	8-729-119-76	TRANSISTOR 2SA1175-HFE			
Q521	8-729-030-08	TRANSISTOR DTC144VSA-TP			
		< RESISTOR >			
R301	1-215-453-00	METAL	22K	1%	1/4W
R302	1-215-425-00	METAL	1.5K	1%	1/4W
R303	1-215-425-00	METAL	1.5K	1%	1/4W
R304	1-215-445-00	METAL	10K	1%	1/4W
R305	1-215-443-00	METAL	8.2K	1%	1/4W
R313	1-215-469-00	METAL	100K	1%	1/4W
R314	1-215-405-00	METAL	220	1%	1/4W
R315	1-215-405-00	METAL	220	1%	1/4W
R316	1-249-393-11	CARBON	10	5%	1/4W
R322	1-249-421-11	CARBON	2.2K	5%	1/4W

Ref. No.	Part No.	Description			Remark
R323	1-249-421-11	CARBON	2.2K	5%	1/4W
R325	1-249-441-11	CARBON	100K	5%	1/4W
R327	1-249-441-11	CARBON	100K	5%	1/4W
R401	1-215-453-00	METAL	22K	1%	1/4W
R402	1-215-425-00	METAL	1.5K	1%	1/4W
R403	1-215-425-00	METAL	1.5K	1%	1/4W
R404	1-215-445-00	METAL	10K	1%	1/4W
R405	1-215-443-00	METAL	8.2K	1%	1/4W
R413	1-215-469-00	METAL	100K	1%	1/4W
R414	1-215-405-00	METAL	220	1%	1/4W
R415	1-215-405-00	METAL	220	1%	1/4W
R416	1-249-393-11	CARBON	10	5%	1/4W
R422	1-249-421-11	CARBON	2.2K	5%	1/4W
R423	1-249-421-11	CARBON	2.2K	5%	1/4W
R425	1-249-441-11	CARBON	100K	5%	1/4W
R501	1-249-435-11	CARBON	33K	5%	1/4W
R502	1-249-425-11	CARBON	4.7K	5%	1/4W
R505	1-249-413-11	CARBON	470	5%	1/4W
R506	1-249-429-11	CARBON	10K	5%	1/4W
R507	1-249-425-11	CARBON	4.7K	5%	1/4W
R508	1-249-413-11	CARBON	470	5%	1/4W
R511	1-249-425-11	CARBON	4.7K	5%	1/4W
R512	1-249-425-11	CARBON	4.7K	5%	1/4W
R521	1-249-429-11	CARBON	10K	5%	1/4W
R522	1-249-403-11	CARBON	68	5%	1/4W
R523	1-249-403-11	CARBON	68	5%	1/4W
R524	1-249-429-11	CARBON	10K	5%	1/4W
R531	1-249-429-11	CARBON	10K	5%	1/4W
R532	1-249-429-11	CARBON	10K	5%	1/4W
R533	1-249-429-11	CARBON	10K	5%	1/4W
R534	1-249-421-11	CARBON	2.2K	5%	1/4W
R535	1-247-843-11	CARBON	3.3K	5%	1/4W
R536	1-249-425-11	CARBON	4.7K	5%	1/4W
R537	1-249-429-11	CARBON	10K	5%	1/4W
R538	1-249-429-11	CARBON	10K	5%	1/4W
R539	1-249-429-11	CARBON	10K	5%	1/4W
R540	1-249-429-11	CARBON	10K	5%	1/4W
R541	1-249-429-11	CARBON	10K	5%	1/4W
R542	1-249-429-11	CARBON	10K	5%	1/4W
R543	1-249-429-11	CARBON	10K	5%	1/4W
R544	1-249-429-11	CARBON	10K	5%	1/4W
R551	1-247-887-00	CARBON	220K	5%	1/4W
R552	1-247-887-00	CARBON	220K	5%	1/4W
R553	1-247-860-11	CARBON	16K	5%	1/4W
R554	1-249-431-11	CARBON	15K	5%	1/4W
R555	1-249-382-11	CARBON	1.2	5%	1/6W
R556	1-249-382-11	CARBON	1.2	5%	1/6W
R557	1-247-883-00	CARBON	150K	5%	1/4W
R558	1-249-393-11	CARBON	10	5%	1/4W
R561	1-249-441-11	CARBON	100K	5%	1/4W
R562	1-249-441-11	CARBON	100K	5%	1/4W
R563	1-247-860-11	CARBON	16K	5%	1/4W
R564	1-249-431-11	CARBON	15K	5%	1/4W
R565	1-249-382-11	CARBON	1.2	5%	1/6W
R566	1-249-382-11	CARBON	1.2	5%	1/6W
R567	1-247-883-00	CARBON	150K	5%	1/4W
R568	1-249-393-11	CARBON	10	5%	1/4W
R571	1-247-885-00	CARBON	180K	5%	1/4W

Ref. No.	Part No.	Description			Remark
R572	1-247-885-00	CARBON	180K	5%	1/4W
R573	1-247-860-11	CARBON	16K	5%	1/4W
R574	1-249-431-11	CARBON	15K	5%	1/4W
R575	1-249-382-11	CARBON	1.2	5%	1/6W
R576	1-249-382-11	CARBON	1.2	5%	1/6W
R577	1-247-883-00	CARBON	150K	5%	1/4W
R578	1-249-393-11	CARBON	10	5%	1/4W
R581	1-249-429-11	CARBON	10K	5%	1/4W
R610	1-249-427-11	CARBON	6.8K	5%	1/4W
R620	1-249-427-11	CARBON	6.8K	5%	1/4W
R720	1-249-427-11	CARBON	6.8K	5%	1/4W
R730	1-249-427-11	CARBON	6.8K	5%	1/4W
		< VARIABLE RESISTOR >			
RV501	1-241-787-11	RES, ADJ, CARBON 47K			
		< VIBRATOR >			
X501	1-579-175-11	VIBRATOR, CERAMIC (10MHz)			
**********					
*	1-661-466-11	T.MOTOR BOARD			
		**********			
**********					
*	1-661-470-11	T.SENS BOARD			
		**********			
		< CONNECTOR >			
CN802	1-506-481-11	PIN, CONNECTOR 2P			
CN803	1-506-481-11	PIN, CONNECTOR 2P			
		< PHOTO INTERRUPTER >			
IC801	8-749-924-18	PHOTO INTERRUPTER RPI-1391			
IC802	8-749-924-18	PHOTO INTERRUPTER RPI-1391			
IC803	8-749-924-18	PHOTO INTERRUPTER RPI-1391			
		< RESISTOR >			
R801	1-249-416-11	CARBON	820	5%	1/4W
R802	1-249-416-11	CARBON	820	5%	1/4W
R803	1-249-416-11	CARBON	820	5%	1/4W
R804	1-249-415-11	CARBON	680	5%	1/4W
**********					
		MISCELLANEOUS			
		**********			
8	1-783-364-11	WIRE (FLAT TYPE) (15 CORE)			
⚠62	1-575-042-21	CORD, POWER (US, CND)			
⚠62	1-575-651-21	CORD, POWER (AEP, UK, AED, SP)			
⚠62	1-696-027-11	CORD, POWER (E)			
⚠62	1-696-845-11	CORD, POWER (AUS)			
⚠63	1-569-007-11	ADAPTOR, CONVERSION 2P (E)			
70	1-773-183-11	WIRE (FLAT TYPE) (23 CORE)			
304	1-769-069-11	WIRE (FLAT TYPE) (16 CORE)			
⚠306	8-848-379-31	OPTICAL PICK-UP KSM-213BKN/M-N			
M101	X-2626-234-1	T. T CHASSIS ASSY (MG) (K) (SPINDLE)			
M102	X-2625-769-1	MOTOR GEAR ASSY (MB) (PP) (SLED)			
M801	A-4604-847-A	MOTOR ASSY (TABLE)			
M802	A-4604-847-A	MOTOR ASSY (LOADING)			

Ref. No.	Part No.	Description	Remark
M810	X-4950-062-1	DOOR MOTOR ASSY	
⚠T901	1-431-759-11	TRANSFORMER, POWER (US, CND)	
⚠T901	1-431-760-11	TRANSFORMER, POWER (AEP, UK, AED, SP, AUS)	
⚠T901	1-431-761-11	TRANSFORMER, POWER (E)	
**********			
		**********	
		HARDWARE LIST	
		**********	
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#2	7-685-871-01	SCREW +BVTT 3X6 (S)	
#3	7-685-134-19	SCREW +PTPWH 2.6X8 (TYPE2)	
#4	7-624-106-04	STOP RING 3.0, TYPE -E	
#5	7-682-947-01	SCREW +PSW 3X6	
#6	7-682-547-04	SCREW +BV 3X6, S TIGHT	
#7	7-685-872-09	SCREW +BVTT 3X8 (S)	
#8	7-621-775-00	SCREW +B 2.6X3	
#9	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S	
#10	7-624-111-04	STOP RING 7.0, TYPE -E	
#11	7-682-552-09	SCREW +B 3X16	
#12	7-621-772-20	SCREW +B 2X5	
#13	7-624-109-04	STOP RING 5.0, TYPE -E	
#14	7-621-775-20	SCREW +B 2.6X5	
#15	7-621-772-30	SCREW +B 2X6	
#16	7-621-255-15	SCREW +P 2X3	
**********			
		ACCESSORIES & PACKING MATERIALS	
		**********	
	1-475-654-11	REMOTE COMMANDER (RM-DX220)	
	1-558-271-11	CORD, CONNECTION (AUDIO) 1.5m	
	1-777-172-11	CORD, CONNECTION (CONTROL A1) 1m (CND)	
	3-810-765-11	MANUAL, COMMONNESS INSTRUCTION (ENGLISH) (US, AUS)	
	3-810-765-21	MANUAL, COMMONNESS INSTRUCTION (ENGLISH, FRENCH, GERMAN, SPANISH, DUTCH, SWEDISH, ITALIAN, PORTUGUESE, CHINESE) (CND, AEP, UK, AED, E, SP)	
	3-862-563-11	MANUAL, INSTRUCTION (ENGLISH) (US, AUS)	
	3-862-563-21	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH) (CND, AEP, UK, E, SP)	
	3-862-563-31	MANUAL, INSTRUCTION (GERMAN, DUTCH, ITALIAN, PORTUGUESE) (AEP, UK)	
	3-862-563-41	MANUAL, INSTRUCTION (SWEDISH, DANISH, FINNISH) (AED)	
	3-862-563-51	MANUAL, INSTRUCTION (CHINESE) (E, SP)	
	4-981-643-01	COVER, BATTERY (for RM-DX220)	
	4-984-086-01	BOOKLET (100)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

9-922-819-11

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Home A&V Products Company

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